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DISEASES CAUSED BY BACTERIA AND FUNGI

Kielwein, G. (1960). Die Ermittlung euterpathogener Staphylokokken. **[Identification of mastitis staphylococci.]** — Zbl. Bakt. I. (Orig.) **178,** 434-441. [Summaries in English, French, Spanish and Russian.] 1

K. examined 114 strains from bovine mastitis and 75 from apparently normal udders for haemolysin, mannite breakdown, coagulase, phosphatase, reductase, hyaluronidase, and urease. If a strain produced haemolysin, it could be regarded as pathogenic. If it did not produce haemolysin, further tests would be necessary to determine pathogenicity. Hyaluronidase activity was a reliable indication of pathogenicity.—R.M.

Høgh, P. (1960). **Coagulase-positive, α-β toxigenic udder staphylococci. A comparison between their sensitivity to penicillin and their growth characteristics on crystal-violet agar.** — Nord. VetMed. **12,** 588-598. [In English. Summaries in German and Danish. Author's summary modified.] 2

674 strains of coagulase-positive staphylococci were tested for sensitivity to penicillin and classified according to their growth characteristics on crystal-violet agar. 77 (11·4%) were resistant to penicillin. A certain correlation was found between resistance and the formation of violet colonies. While 22·7% of the violet-type strains were resistant, only 3·7% of the orange-type and 6·7% of the white-type strains were. All of 551 strains of staphylococci were sensitive to chloramphenicol. 73 penicillin-resistant strains were all sensitive to novobiocin. Of 63 strains from a herd treated with penicillin for several years, 55 (87·3%) were resistant to penicillin.

Derbyshire, J. B. (1960). **Experimental studies on the occurrence of staphylococcal antitoxin in the whey of cows.**—Res. vet. Sci. **1,** 350-354. [Author's summary modified.] 3

Antitoxin was not detected in the whey of non-vaccinated cows until 3 days after experimental infection of the udder with staphylococci. In cows vaccinated with an adjuvant cell-toxoid prepared from *Staph. aureus* strain 201, antitoxin appeared in the whey within 6 hours of intramammary challenge. Mammary inoculation of vaccinated cows with 10 ml. distilled water also induced a rapid occurrence of antitoxin in the milk. It is concluded that some degree of irritation of the mammary epithelium is necessary before circulating antitoxin can pass into the milk.

Černohous, J. (1960). Studie o nakažlivé osutině selat. (Exanthema suis exfolians). **[Studies on infectious impetigo in piglets.]**— Sborn. čes. Akad. zemědělsk. Věd, vet. Med. **5,** 537-548. [In Czech. Summaries in German and Russian.] 4

A white staphylococcus, resembling that described by Sompolinsky [*V.B.* **22,** 3035], was isolated from skin lesions of piglets with infectious impetigo. The organism was not identical with *Staphylococcus epidermidis* of man. Details were given of the histopathology of lesions and successful treatment with penicillin and aureomycin.—E.G.

Smith, H. Williams & Crabb, W. E. (1960). **Antibiotic sensitivity of staphylococci from noses of veterinary surgeons and farmers.**— Lancet, Sept. 3rd, 515-516. [Authors' summary modified.] 5

88% of the strains of *Staph. aureus* isolated from the noses of 200 veterinary surgeons were penicillin-resistant. The corresponding figure for 200 farmers was 21%. The proportion of strains resistant to tetracyclines, streptomycin, or chloramphenicol was also higher in the veterinary surgeons (15%) than in the farmers (3%). The high

incidence of resistant strains in the veterinary surgeons is probably related to the frequent handling of antibiotics.

Hughes, D. L. (1960). **Some epidemiological patterns in bovine mastitis.**—Vet. Rec. **72,** 485-497 & 498. **6**

The results are reported of a survey on the bacteriological examination of all clinical cases of mastitis in a veterinary practice in Derbyshire between 1949–53. About 4,000 cows and heifers were at risk annually in 154 herds. The overall incidence of mastitis was 13·9%, but there was a decline in the total annual numbers from 625 in 1949 to 308 in 1953. *Streptococcus agalactiae* infections were the most frequent in each year (25·6%) but a definite decrease in incidence over the period was evident. *Staphylococcus aureus* infections showed an increase towards the end of the survey from 10·8 to 16·5%. *Str. dysgalactiae* and *Cornynebacterium pyogenes* infections fluctuated from year to year according to the prevalence of summer mastitis. *Str. uberis* infections at 18% of all infections maintained a steady incidence throughout the period. The incidence of mastitis was high in winter and low in spring and early summer; in certain years pronounced peaks occurred in late summer and early autumn. The contribution each category of infection made to this pattern was characteristic for each bacterial species. Mastitis incidence increased with age, particularly with *Str. agalactiae* and *uberis,* until the age of 6 years when the incidence of all infections declined. Most cases of mastitis occurred either in early lactation (1–7 weeks) or in animals whose mammary glands were undergoing involution or were quiescent; *Str. agalactiae* and *C. pyogenes* predominated in dry cows. *Str. agalactiae* was least frequently accompanied by other infections whilst *Staph. aureus* was the most frequent co-existent micro-organism.—A. Ackroyd.

Pedersen, P. S. (1960). Bakteriologisk mastitis-diagnostik. II. Penicillinfølsomhed som middel til differentiering af aesculinspaltende mastitisstreptokokker. [**Bacteriological diagnosis of mastitis. II. Sensitivity to penicillin as a means of differentiation of aesculin-splitting mastitis streptococci.**] — Nord. VetMed. **12,** 308-320. [In Danish. Summaries in English and German.] **7**

Nearly all strains of *Str. uberis* grew in the presence of 0·01 unit penicillin per ml. of agar but not at higher conc. Most *Str. lactis* strains grew in the presence of 0·1 to 0·5 units. Enterococci grew in the presence of 1 unit. Another reliable means for distinguishing *Str. uberis* was its ability to split sodium hippurate during 2–3 days' incubation, or inulin within 24 hours. Only 7% of 533 aesculin-splitting strains produced nicin. Strains were tested for resistance or susceptibility to nicin.—R.M.

Blomberg, H. & Gästrin, B. (1960). Undersökningar rörande tillförlitligheten av Whiteside mastitis test och California mastitis test. [**Investigations into the reliability of Whiteside's mastitis test and the California mastitis test.**] — Nord. VetMed. **12,** 293-300. [In Swedish. Summaries in English and German.] **8**

In tests on individual and churn samples from 372 farms the California test gave a more accurate indication of cell content than Whiteside's test; results were similar to those obtained by Breed's direct microscopic method. Neither test indicated the presence of CAMP-positive streptococci in milk.—R.M.

Dedié, K. & Kielwein, G. (1960). Alkylarylverbindungen als Reagens zur Ermittlung von Sekretionsstörungen des Euters beim Rind. [**Alkylaryl compounds as reagents for detecting bovine mastitis.**] — Rindertuberk. u. Brucellose **9,** 19-27; 35-43. **9**

Of 2,929 samples of milk, 544 were positive and 2,385 negative to the California test using an alkylaryl triethanolamine salt in a 4% concentration, and 675 were positive for mastitis and 2,272 negative according to cell count. Mastitis bacteria were found in 58% of samples positive and 19% of samples negative to both tests. Milk from healthy cows was positive to the California test for the first 3 days after parturition and also towards the end of lactation when the udder was milked only once daily. The California test was recommended for general use in dairy herds. —M.G.G.

Pounden, W. D., Frank, N. A. & Vandersall, J. H. (1960). **Further observations on mastitis in cows fed legume grass forage as soilage and silage.**—J. Amer. vet. med. Ass. **137,** 53-57. **10**

There were 24 attacks of mastitis in 5 cows out of 15 fed a freshly cut legume grass mixture ("soilage") from May to September, and 7 attacks of mastitis in 2 cows out of 15 fed similar forage as silage. The following year 36 cows were fed a similar green forage but for half of them it was cut once a day for the two feeds and for the other group it

was cut twice a day. The incidence of mastitis was similar in the two groups and 54 attacks occurred in 15 of the 36 cows. Cultures isolated from 48 milk samples from cows with mastitis included staphylococci, streptococci, coliform organisms and fungi. Milk samples collected weekly from each group were tested for resistance against three mastitis producing organisms (coliforms, staphylococci and streptococci), and although there was little difference between groups in resistance to the coliforms, resistance to the staphylococci and streptococci was, on an average, greater in the group fed silage.—E. J. CASTLE.

Hook, E. W., Wagner, R. R. & Lancefield, R. C. (1960). **An epizootic in Swiss mice caused by a group A Streptococcus, newly designated type 50.**—Amer. J. Hyg. **72,** 111-119. [Authors' summary modified.] 11

This report describes an outbreak of streptococcal infection in a colony of albino mice at Johns Hopkins University. Streptococci were cultured from the throats of 22% of newly-weaned mice, 34% of adult mice and 52% of breeding stock. One third of infected mice developed cervical lymphadenitis, and about half the mice observed for 3 months died of systemic streptococcal infection. All features of the naturally acquired disease could be reproduced by deposition of streptococci in the nares of mice formerly free from infection.

The group A streptococcus responsible belonged to the same serological type as streptococci isolated from 3 other outbreaks of infection in laboratory mice and this has been named Type 50.

Giesecke, D. (1960). Untersuchungen am Streptococcus bovis und einer gelb wachsenden Variante aus dem Rinderpansen. **[Studies on Str. bovis and a yellow variant from the bovine rumen.]**—Zbl. Bakt. I. (Orig.) **179,** 448-455. [Summaries in English, French, Spanish and Russian. English summary modified.] 12

Five strains were isolated from four cattle. Two strains produced yellow colonies; this property remained unchanged over a long cultivation period. The yellow strains did not differ much from other strains of *Str. bovis* in morphology, fermentation pattern, percentages of products formed from glucose, and synthesis of dextran.

Mieth, H. (1960). Untersuchungen über das Vorkommen von Enterokokken bei Tieren und Menschen. I. Mitteilung: Ihr Vorkommen im Darm von gesunden Schlachtschweinen. **[Enterococci in animals and man. I. In the intestine of healthy slaughter pigs.]** — Zbl. Bakt. I. (Orig.) **179,** 456-482. [Summaries in English, French, Spanish and Russian. English summary modified.] 13

With TKT-agar (Køhler-Ellingsen & Hauge, 1953), faeces from 100 pigs were examined for aesculin-splitting streptococci of group D. The form of growth of the different types of enterococci varied. *Str. bovis* was isolated from 88 pigs and *Str. faecium* from 56. *Str. glycerinaceus* (*faecalis*) was recovered from 6 pigs, *Str. liquefaciens* from 22, and both together from 3 pigs. *Str. zymogenes* and *Str. durans* were not found. In most cases several types of enterococci were present in a single sample. In view of the high incidence of *glycerinaceus* and *liquefaciens* and the probability that the enterococcal flora depends on the food and is not host-specific, these organisms cannot be used to indicate human contamination. Altogether, 436 strains were isolated and examined biochemically and serologically. Of these, 18 were not enterococci.

Londrillo, A. (1960). Sulla presenza di anticorpi nel sangue di animali iperimmunizzati per via intradermica contro il carbonchio ematico. **[Antibodies in the blood of animals immunized against anthrax by the intradermal route.]**—Acta med. vet., Napoli **6,** 199-208. 14

Protective, but not precipitating, antibodies were present in the serum of rabbits hyperimmunized by the i/d route with attenuated followed by virulent *B. anthracis*. —T.E.G.R.

Brachman, P. S., Plotkin, S. A., Bumford, F. H. & Atchison, M. M. (1960). **An epidemic of inhalation anthrax: the first in the twentieth century. II. Epidemiology.**—Amer. J. Hyg. **72,** 6-23. 15

Inhalation anthrax occurred in 5 human beings and cutaneous anthrax in another 4 during a period of 3 months at a mill in New Hampshire. Infection was attributed to goat hair imported from India.—R.M.

Papparella, V. & Marchese, B. (1960). L'azione sporicida del disinfettante Pagnini (H_2O_2 e HCOOH) sulle spore del B. anthracis osservata al microscopio elettronico. **[Study by electron microscopy of the lethal action of hydrogen peroxide–formic acid solution on**

the spores of Bacillus anthracis.]—Acta med. vet., Napoli **6**, 139-145. [Summaries in English, French and German.] **16**

A spore suspension was added to the disinfectant which was a solution of 3% pure formic acid (90%) in H_2O_2 at 12 volumes. Electron microscopy revealed complete destruction of the spores after a few minutes. There are 17 photomicrographs.—T.E.G.R.

Fritschi, E. (1960). Die Organisation und Durchführung der staatlichen Rindertuberkulosebekämpfung in der Schweiz. **[Organization and execution of tuberculosis control in cattle in Switzerland.]** — Schweiz. Arch. Tierheilk. **102**, 223-232. [Summaries in English, French and Italian.] **17**

In 1942 the cantons of Switzerland were given the authority to set up TB. eradication areas, and in 1950 control of bovine TB. was declared compulsory throughout the country. Between 1951 and 1959, when TB. was finally eradicated, 348,883 reactors were slaughtered, out of a total cattle population of 1,600,000. Owners were compensated with 80–90% of the market value of the animals.—M.G.G.

Saurat, P. & Lautié, R. (1960). Mise en évidence d'anticorps dans le sérum des bovins tuberculeux, par la méthode de séro-précipitation en milieu gélifié. **[Gel diffusion test for tuberculosis in cattle.]**—Rev. Méd. vét. **111**, 481-489. [In French. Summaries in English and Spanish.] **18**

The agar gel double diffusion test has been tried on human sera [*V.B.* **30,** 335]. The present authors found that it gave positive result in only 9 of 180 sera from tuberculin-positive cattle. Culture filtrates of virulent, freshly isolated bovine tubercle bacilli were used as antigen.—R.M.

Schwarz, H. (1960). Zur Züchtung boviner Tuberkelbakterien auf Blutagar. **[Cultivation of bovine-type tubercle bacilli on blood-agar.]** —Zbl. Bakt. I. (Orig.) **178**, 506-514. [Summaries in English, French, Spanish and Russian.] **19**

Tests on 120 pathological lymph nodes from cattle and pigs and on 40 milk samples from tuberculous cows confirmed the value of the medium described by Tarshis & Frisch [*Amer.Rev.Tuberc.* **64,** 551 (1951); also *V.B.* **25,** 1861].—R.M.

Mankiewicz, E. & Liivak, M. (1960). **Effect of Candida albicans on the evolution of experimental tuberculosis.** — Nature, Lond. **187**, 250-251. **20**

G.pigs inoculated s/c with 1 mg. (wet wt.) of a 5 day culture of *C. albicans* together with 0·05 mg. (wet wt.) of *Mycobacterium tuberculosis* (Strain $H_{37}Rv$) developed more extensive TB. than controls inoculated with *M. tuberculosis* alone, and a greater number died within 6 weeks of the inoculation. Similar, though less marked, results occurred with growth-promoting polysaccharide fraction of *C. albicans* which appears to resemble bacterial dextran chemically. *C. albicans* was not recovered from any tissue other than the regional lymph nodes.

—A. Ackroyd.

Brandes, H. (1960). Tuberkuloseähnliche Veränderungen in den Mesenteriallymphknoten des Schweines (vorläufige Mitteilung). **[Tuberculoid changes in the mesenteric lymph nodes of pigs.]**—Arch. Lebensmittelhyg. **11**, 193-198. **21**

The changes were seen at meat inspection in 141 (0·94%) of 15,000 pigs. They were often associated with atypical chromogenic mycobacteria. There are two colour photographs of lesions.—R.M.

Noè, L. & Puglioli, U. (1960). Terapia della tubercolosi aviare con idrazide isonicotinica. **[Treatment of avian tuberculosis with isoniazid.]**—Veterinaria, Milano **9**, 113-114. **22**

Of 70 tuberculin-positive fowls in various stages of the disease 55 were given isoniazid in the food at 2 g./100 kg. body wt. daily for 50 days. The other 15 were left untreated. Four cachectic birds in each group died after 8 days. Further mortality occurred in the untreated but not in the treated group. After treatment there was an increase of 50–400 g. in body weight. At the end of treatment 25 fowls were slaughtered. Severe lesions were found in the ovaries of 3; in 7 there were small foci in the liver and spleen; in 5 there were miliary lesions in the left lobe of the liver; and in 10 there were no appreciable gross lesions. Of the remaining 26 some were slaughtered in a good state of nutrition and the rest were still in good condition at the time of reporting.—T.E.G.R.

Chandler, R. L. (1960). **The sensitizing properties of three types of material prepared by chemical treatment of Johne's bacilli.**—Res. vet. Sci. **1**, 283-295. [Author's summary modified.] **23**

Three types of material prepared by chemical extraction or treatment of Johne's bacilli were inoculated into lab. animals or

cattle and their sensitizing effect was investigated in relation to the tuberculin test. Observations on local response, antibody production and immunological specificity were made.

Material extracted by methanol, when suspended in saline, was non-sensitizing, whether alum-precipitated or not; however, when suspended in liquid paraffin, a type of sensitivity having certain characteristics was produced.

A method incorporating treatment of bacilli with chlorobenzene produced a sensitizing inoculum.

Methods incorporating treatment of bacilli with potassium hydroxide, in aqueous or alcoholic solution, eliminated the sensitizing ability of Johne's bacilli. The products could be incorporated in oil-type adjuvants to form non-sensitizing preparations which became localized at the site of inoculation.

Dafaala, E. N., Irfan, M. & Imbabi, S. (1960). **Isolation of an organism resembling Corynebacterium equi associated with bronchopneumonia in an adult horse.**—Sudan J. vet. Sci. anim. Husb. **1,** 26-30. [Authors' summary modified.] **24**

The authors described the clinical picture, pathology and bacteriology of a case of abscess formation in the lung of an adult horse. The organism had an antigen related to the species antigen of a stock culture of *C. equi* although there were some morphological and biochemical differences. It is postulated that a certain amount of species antigen is present on the surface of *C. equi* together with the type specific agglutinogen. The results indicate that *C. equi* probably shares some antigen with *C. renale.*

Hartwigk, H. & Grund, S. (1960). Atypische Corynebakterien beim Rind. **[Atypical corynebacteria from cattle.]** — Zbl. Bakt. I. (Orig.) **179,** 499-508. [Summaries in English, French, Spanish and Russian.] **25**

Three atypical strains were isolated from the uterus or vagina of apparently healthy slaughtered cows. Their biochemical, cultural and serological properties were compared with typical strains of *C. pyogenes* and *C. renale.* —R.M.

Watanabe, M., Suzuki, K., Fujiki, M. & Abe, N. (1960). **[Studies on spontaneous Corynebacterium murium infection in mice with special reference to the effect of cortisone.]** —Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 23-31. [In Japanese. Summary in English.] **26**

Inoculation of mice with *C. murium* usually caused latent infection with specific lesions in the liver, kidneys, lungs and intestine. But injections of cortisone provoked clinical infection which was nearly always fatal.—M.G.G.

Doyle, T. M. (1960). **Can swine erysipelas be eradicated? Epidemiological and immunological aspects.** — Vet. Rev. Annot. **6,** 95-103. **27**

In this review D. examines the evidence for the commonly held belief that *E. rhusiopathiae* can survive for very long periods or even multiply in certain soils. He concludes that there is no evidence that the organism can multiply in the soil, that the length of time it can survive in soil is no greater than that of many other non-sporing pathogens and that therefore the soil is not the most important source of infection. Infected paddocks can be cleansed by ploughing and leaving them vacant for a time.

The incidence of healthy carriers is very high and these are the common and important source of infection.

Virulent cultures used along with immune serum for immunization perpetuate the disease and should no longer be used.

Eradication should be possible in closed herds provided regular vaccination at correct intervals with either adsorbed or living avirulent vaccine is carried out and good hygiene practised. Breeding stock should be vaccinated at six-monthly intervals.

Murase, N. & Ebi, Y. (1960). **Studies on the typing of Erysipelothrix rhusiopathiae. IV. Epizootiological significance of Erysipelothrix rhusiopathiae harboured in the tonsils of apparently healthy pigs.** — Jap. J. vet. Sci. **22,** 1-10. [In English. Summary in Japanese.] **28**

The slide agglutination test is as specific as the precipitation test in differentiating the sero-groups of *E. rhusiopathiae* and takes much less time. Of 362 strains of *E. rhusiopathiae* isolated by mouse inoculation or direct culture from the tonsils of 1,045 healthy pigs aged 6–8 months, slaughtered in the Tohoku district of Japan, 19 strains belonged to Group A and 175 to Group B. The remainder were fairly evenly distributed between the other four groups. Isolation rates were highest in autumn and winter and lowest in spring, whilst the incidence of swine erysipelas in the same

district was the reverse. This discrepancy may be due to the method practised in the district of rearing two litters of pigs in a year.—A. ACKROYD.

I. Janowski, H. & Mierzejewska, M. (1959). Dalsze obserwacje nad zmiennością niezjadliwego włoskowca różycy Stauba. Wpływ pasaży przez podłoża na stopień zjadliwości szczepu. **[Variability of Staub's avirulent E. rhusiopathiae strain. I. Effect of medium on virulence.]**—Roczn. Nauk rol. **69,** 209-224. [In Polish. Summaries in English and Russian.] **29**

II. Truszczyński, M. & Janowski, H. (1959). Badania nad podniesieniem wartości uodparniających niezjadliwej kultury różycowej według Stauba. III. Wpłw podłoży na szybkość lizy i własności uodparniające szczepu. **[Enhancement of the immunogenic properties of Staub's avirulent E. rhusiopathiae vaccine. III. Effect of medium on lysis and immunogenicity.]**—Ibid. 225-243. [In Polish. Summaries in English and Russian.] **30**

I. Staub's avirulent strain of *E. rhusiopathiae* had increased pathogenicity for mice when passaged 20 or 24 times through horse-meat broth alone or enriched with 3% horse serum, 0·15% agar and 0·2% sodium phosphate or 1% peptone. The passaging of the strain through enriched media resulted in greater increase in pathogenicity for mice than the passaging through horse-meat broth alone. The authors are against the use of horse-meat broth for Staub's avirulent strain vaccine as it may cause an increase in virulence.

II. Lysis of the organisms was slightly slower in horse-serum broth with 0·15% agar than without agar but was much faster in beef-extract broth. The cultures grown in horse-serum broth with 0·15% agar provided the best vaccine. The addition of 12·5 or 25% aluminium hydroxide or 20% of 50% glycerine had no apparent effect on the inhibition of lysis and on the results of immunization in mice and pigs. When the culture was grown in beef-extract broth, where the lysis of organisms was fairly fast, the results of mouse vaccination were not successful.

The speed of lysis and the immunogenic properties of the vaccines depended more on the inherent properties of a strain than on the culture media on which it was grown.

—M. GITTER.

Orlandella, V. (1960). Ricerche sull'azione dell'ossitetraciclina sull'Erysipelothrix rhusiopathiae. **[Effect of oxytetracycline on Erysipelothrix rhusiopathiae in mice.]** — Acta med. vet., Napoli **6,** 187-197. **31**

Survival of all mice was achieved with oxytetracycline when: 0·5 mg. was administered simultaneously with experimental infection and repeated every 8 or 12 hours for 4 days; 0·5 mg. was administered 12 hours after infection and repeated every 8 hours for 4 days; 1 mg. was administered after 24 hours and repeated every 8 hours for 4 days. Surviving mice did not develop immunity.

—T.E.G.R.

Nardelli, L. & Dal Prato, A. (1960). Ricerche sull'immunità conseguente ad una infezione da malrosso trattate con penicillina. **[Immune response in mice with Erysipelothrix rhusiopathiae infection treated with penicillin.]**—Vet. ital. **11,** 91-98. [Summaries in English, French and German.] **32**

Mice which recovered from *E. rhusiopathiae* infection after treatment with massive doses of penicillin every 24 hours did not develop immunity. When smaller doses were given therapeutic results were poor but the few survivors developed some resistance.

—T.E.G.R.

Owen, C. R., Meis, J. W., Jackson, J. W. & Stoenner, H. G. (1960). **A case of primary cutaneous listeriosis.** — New Engl. J. Med. **262,** 1026-1028. **33**

A veterinary surgeon delivered a 7-month foetus from an aborting cow, and *E. monocytogenes* was isolated from the foetus. He developed slight illness 36 hours later which passed off within a day. Then small skin lesions developed along one arm, and the same organism was isolated. The lesions responded rapidly to sulphonamide therapy. Agglutination tests were negative. [See also *V.B.* **30,** 22.]—R.M.

Wahby, A. M., Zaki, O. A. & Mahmoud, A. H. (1960). **Studies on an unidentified organism isolated from an Egyptian buffalo.**—Zbl. VetMed. **7,** 392-402. [In English. Summaries in French, German and Spanish.] **34**

The buffalo had fever, skin nodules, swollen superficial lymph nodes and the lymphatic vessels of the limbs were prominent. It died suddenly, apparently from rupture of the hemiazygos vein; the main lesions were inflammation of the urinary tract.

An organism isolated from the kidneys was like a corynebacterium except for its pleomorphism and the occurrence of

filamentous forms; it was not an actinomycete. Some features resembled *Erysipelothrix* spp. It was pathogenic for lab. animals and fowls. Although cultures were inhibited by four antibiotics, infected lab. animals did not respond to tetracycline. Sulphathiazole appeared to prolong survival.—R.M.

Carter, G. R. & Bain, R. V. S. (1960). **Pasteurellosis (Pasteurella multocida). A review stressing recent developments.**—Vet. Rev. Annot. **6,** 105-128. 35

A discussion of advances, particularly in immunization and in the typing of strains, made during the past twenty years, including some observations not previously published. The authors make a plea for the general adoption of the name *Pasteurella multocida* in place of *P. septica* and the many other names which have been used in the past.—R.M.

Anon. (1960). **United Nations. Report of the FAO meeting on haemorrhagic septicaemia held at Manila, Philippines 30th November–5th December 1959.** pp. 36. Rome: Food and Agriculture Organization of the United Nations. [Meeting Report AN-1959/5.] 36

The meeting discussed incidence, vaccines and other aspects of haemorrhagic septicaemia in the 15 countries represented and emphasized the need for international co-operation. Thirteen papers were read; these are summarized as an Appendix. It was proposed to hold another meeting two years hence.

—R.M.

Israil, M. & Quader, M.-A. (1960). **Haemorrhagic septicaemia oil adjuvant and alum precipitated vaccines.**—Bull. Off. int. Epiz. **54,** May pp. 410-417. [In English. Summary in French. Authors' summary modified.] 37

Two batches of oil adjuvant vaccine were tested on four bull calves but only one out of the four survived challenge with virulent organisms. Promising results were however obtained in preliminary tests with alum precipitated vaccines: no significant difference in antigenic value was observed among batches of these vaccines made from 18, 24, 36 and 48 hours' growth.

Bouley, G. & Charpentier, J.-C. (1960). Enzootie à Haemophilus bronchisepticus dans un élevage de chinchillas. **[Outbreak of Haemophilus bronchisepticus infection in chinchillas.]**—Rec. Méd. vét. **136,** 557-560. [Summaries in English and Spanish.] 38

An acute illness was characterized by prostration and slight dyspnoea. Four animals died, but losses stopped after tetracycline therapy commenced. *H. bronchisepticus* was isolated from the lungs of 2 chinchillas that died and its properties were studied.—M.G.G.

Neeman, L. (1960). **A newly-identified Haemophilus spp. associated with bovine vaginitis and cervicitis. I. Identification of the organism.** — Refuah vet. **17,** 13-14. [In Hebrew. In English. p. 41.] 39

From two herds in Northern Israel a copious purulent discharge from cases of vaginitis and cervicitis in both cows and calves consistently yielded the organism described as a new *Haemophilus* species. Cultural behaviour and nutritional requirements resembled those of *H. gallinarum* but the colonies of the isolate on sheep blood medium were much larger. Hyperimmune sera prepared in rabbits for both species agglutinated the homologous antigens to a titre of 1 : 640, but the heterologous antigens only partially at 1 : 40. Attempts to infect cattle experimentally are in progress.

—F. L. M. Dawson.

Kennedy, P. C., Biberstein, E. L., Howarth, J. A., Frazier, L. M. & Dungworth, D. L. (1960). **Infectious meningo-encephalitis in cattle, caused by a Haemophilus-like organism.**—Amer. J. vet. Res. **21,** 403-409. 40

In 1958, a disease characterized by a brief prodromal stage of fever and stiffness which, unless treated by antibiotics, was followed by the rapid development of neurological signs and death, occurred randomly in a group of feedlot cattle in 15 pens in California. About 2·5% died. Lesions were confined to the brain where single and multiple areas of softening were present due to a bacterial vasculitis which led to thrombosis and infarction. A small Gram-negative coccobacillus was isolated from the brain lesions and other tissues which had cellular, morphological and cultural traits resembling *Haemophilus agni,* but required increased CO_2 tension for growth on primary isolation. Eventually it would grow on bloodless and haemoglobin-free medium. The disease was set up in calves by i/v inoculation of the organism. Evidence was obtained that inapparent infection was the rule.

—A. Ackroyd.

Goupille, F., Hamon, Y. & Vieu, J.-F. (1960). Étude de quelques souches de coliformes responsables de la mastite bovine. **[Study of coliform strains causing bovine mastitis.]**

—Ann. Inst. Pasteur **98**, 577-585. [Summary in English.] **41**

Of 44 strains 19 were classified as *Escherichia coli,* 2 as atypical *E. coli,* 14 as *E. intermedium,* 2 as *Klebsiella* and one as a paracolon bacillus. Detailed results of serological studies are given in a Thesis by Goupille from the Alfort School. The drugs that inhibited most of the strains were chloramphenicol and streptomycin, although many were inhibited by neomycin, framycetin, sulphonamides and "furadoine". The distribution of species (from the Paris region) was compared with the findings of Murphy & Hanson (1943) in New Jersey, Fey (1955) in Switzerland, Redaelli (1956) in Lombardy: it was evident that the distribution of species of coliform organisms differed in different parts of the world. The pattern of colicine formation indicated that strains from bovine mastitis were different from strains causing other diseases in man and animals.—R.M.

Dam, A. (1960). **Serological O-grouping of strains of E. coli isolated from cases of coli septicaemia in calves.**—Nord. VetMed. **12,** 321-342. [In English. Summaries in German and Danish.] **42**

Typing of strains from 431 calves in Denmark revealed that more than 40% belonged to O group 78, and 15% to group 3-115. Other Danish workers had also found that group 78 predominated (Bokhari & Ørskov, 1952). Two monovalent hyperimmune sera, including one prepared against group 78, gave better protection to mice than the polyvalent antisera commercially available. —R.M.

Palyusik, M. (1960). Chlorociddal kezelt coli-baktériumok rezisztenciája streptomycinnel szemben. **[Resistance to streptomycin of coli bacilli treated with chloramphenicol.]** —Mag. állator. Lapja **15,** 258-259. [In Hungarian. Summaries in English and Russian.] **43**

During routine examination of pig faeces samples for salmonella, using sodium tetrathionate-streptomycin agar plates, one plate was heavily overgrown by a streptomycin resistant *E. coli* strain. The pig from which the sample came had previously been treated with a total dose of 9·6 g. "Chlorocid" (a chloramphenicol preparation). For the further study of this phenomenon two mixtures of 50 *E. coli* strains, one consisting of strains isolated before, and one after, the treatment of the pigs with Chlorocid, were subjected to sensitivity tests against Chlorocid and streptomycin. It was found that while the inhibition zone around Chlorocid decreased in diameter considerably after treatment, it remained unchanged around streptomycin; nevertheless a few isolated colonies of streptomycin resistant strains could be seen within the inhibition zone, indicating that treatment with chloramphenicol may result in the production of streptomycin resistant *E. coli* strains.

In *in vitro* tests using 60 Chlorocid and streptomycin sensitive strains, 59 became resistant to Chlorocid and one of these also became resistant to streptomycin after they were propagated in broth containing Chlorocid.—A. Sebesteny.

Thomas, C. A. & Suskind, S. R. (1960). **Production of new antigens in phage-infected Escherichia coli K12.** — Virology **12,** 1-7. [Authors' summary modified.] **44**

Immune sera against crude extracts and fractions of *Escherichia coli* K12 infected with phage T4 have been completely absorbed with extracts of uninfected K12. These sera no longer give a positive precipitin reaction or agar diffusion test with extracts of uninfected bacteria, but they still react weakly with intact T4 phage and strongly with both disrupted phage and extracts of T4-infected K bacteria. However, these absorbed sera, after absorption with intact and disrupted phage particles, exhibit positive precipitin and agar diffusion tests only with extracts of infected bacteria. These results suggest that the residual activity in the serum absorbed with extracts of uninfected bacteria and of phage is due to antibodies produced against new antigens, which are present in the infected cell but are not found in purified phage particles.

Ewing, W. H. (1960). **Enterobacteriaceae. Biochemical methods for group differentiation.** pp. 30. Washington: U.S. Govt. Printing Office. 20 cents. [Public Health Service Publ. No. 734.] **45**

All the tests that are essential for determination of the group to which an enteric bacterium belongs and their methods are detailed. These consist of the indol, methyl red, Voges-Proskauer, hydrogen sulphide and ninhydrin tests, ammonium salts, citrate and motility test mediums, tests for the production of urease, decarboxylase activity, and gelatin liquefaction, test for growth in the presence of potassium cyanide, deamination of phenylalanine to phenylpyruvic acid, and

carbohydrate fermentation tests. Methods that are known to be of value in certain group or subgroup determinations and in the identification of cultures that may resemble Enterobacteriaceae are also described.

—A. Ackroyd.

Papadakis, J. A. (1960). **Dulcitol-sucrose-salicin-iron-urea agar (DSSIU) — a new medium for differential diagnosis of Salmonellae.**—J. Hyg., Camb. **58,** 331-336. [Author's summary modified.] **46**

A new medium is described which, on the basis of a single-tube culture, tests the fermentation of three sugars, H_2S production and urea hydrolysis.

On this medium 91% of 228 salmonella gave easily recognized characteristic reactions, simulated only by some strains of the *Bethesda-Ballerup* group. Proteus strains and most paracolon strains gave equally characteristic pictures.

The reactions of some other Enterobacteria are described. It is suggested that the medium deserves extended trial in routine work.

Kauffmann, F., Lüderitz, O., Stierlin, H. & Westphal, O. (1960). Zur Immunchemie der O-Antigene von Enterobacteriaceae. I. Analyse der Zuckerbausteine von Salmonella-O-Antigenen. **[Immunochemistry of Enterobacteriaceae. I. Analysis of sugar components of O-antigen.]**—Zbl. Bakt. I. (Orig.) **178,** 442-458. [Summaries in English, French, Spanish and Russian.] **47**

At least 13 sugars were identified in O-antigen preparations from 90 salmonella serotypes. 16 different combinations of sugars were recognized. A given combination was characteristic of one or more serotypes.—R.M.

Lüderitz, O., Kauffmann, F., Stierlin, H. & Westphal, O. (1960). Zur Immunchemie der O-Antigene von Enterobacteriaceae. II. Vergleich der Zuckerbausteine von Salmonella S-, R- und T-Formen. **[Immunochemistry of the O antigens of Enterobacteriaceae. II. Sugar components of S, R and T forms of Salmonella.]**—Zbl. Bakt. I. (Orig.) **179,** 180-186. [Summaries in English, French, Spanish and Russian.] **48**

Polysaccharide antigens of the R and T forms of *S. paratyphi B, S. typhi-murium* and *S. bareilly* consisted of glucosamine, heptose, galactose and glucose. Polysaccharide of the S form of *S. bareilly* contained mannose in addition to these 4 sugars, and polysaccharide of the S form of *S. paratyphi B* and *S. typhi-murium* also contained mannose, rhamnose and abequose.—M.G.G.

Raynaud, M. & Digeon, M. (1960). Une nouvelle méthode de préparation des endotoxines. **[Hydroxylamine method for preparing endotoxins.]**—C.R. Acad. Sci., Paris **251,** 985-986. **49**

Endotoxins were prepared from *Salmonella typhi* by extraction of rough and smooth colonies by a M/1 soln. of hydroxylamine at pH 7 and at 38°C. for an hour.—R.M.

Rioche, M. (1960). Les salmonelles et la flore "Gram négative" de l'intestin du chien dans la région d'Alger. **[Salmonella and Gram-negative flora of the intestine of dogs in the Algiers district.]**—Arch. Inst. Pasteur Algér. **38,** 31-36. **50**

Of 100 healthy dogs, 2 yielded *S. typhi-murium* from the intestinal contents and 2 yielded *S. dublin* and an unidentified salmonella strain from the bile. The Gram-negative flora in 49 dogs was normal except in one which yielded *Shigella flexneri.*

—M.G.G.

Röhr, W. (1960). Salmonellen in Futtermitteln. Bericht über eine 6 jährige Untersuchungstätigkeit im Veterinäruntersuchungs- und Tiergesundheitsamt Potsdam in den Jahren 1954-1959. **[Salmonella in feedstuffs. Six years' investigations at the Potsdam veterinary investigation centre.]** — Mh. VetMed. **15,** 296-301. **51**

In 6 years, 1,390 salmonella strains of 66 types were isolated from 1,200 (23·6%) of 5,066 samples of feedstuffs. The commonest type was *S. cubana* (190 strains), followed by *S. derby* (157), *S. newington* (151), *S. meleagridis* (138) and *S. havana* (85). Heating or other suitable treatment of feedstuffs was recommended.—M.G.G.

Hofmann, P., Hörchner, F. & Wolle-John, R. (1960). Einschleppung seltener Salmonellen durch importierte Geflügelfedern. **[Introduction of rare salmonella species by the importation of poultry feathers.]**—Zbl. Bakt. I. (Orig.) **178,** 484-491. [Summaries in English, French, Spanish and Russian.] **52**

Fourteen serotypes were isolated from 17 samples of duck feathers imported from China, Hong Kong or Formosa. None were found in 7 samples from France, Roumania, the U.S.A. or Poland.—R.M.

van Dorssen, C. A., van Vloten, J. G. C., Poelma, F. G. & Zwart, P. (1960). Nogmaals salmonellose bij zeemeeuwen. **[Salmonellosis in seagulls.]** — Tijdschr. Diergeneesk. **85,** 1015-1025. [In Dutch. Summaries in English, French and German.] **53**

The authors discussed the relevant literature and described cases from which *S. typhi-murium* was isolated. It appeared that *S. typhi-murium* infection was common in gulls of the Dutch, German and Danish coasts, and it was suggested that gulls were the source of infection for ducks, not *vice versa.*—R.M.

Watanabe, S., Hashimoto, K., Kume, T., Kuniyasu, C. & Sakazaki, R. (1960). **[Studies on salmonella infection in hen's eggs during incubation with special reference to S. pullorum and S. senftenberg. V. Bactericidal action of yolk, albumen, allantoic fluid and serum.]**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 11-21. [In Japanese. Summary in English.] **54**

About half of *S. pullorum* were killed by ½ hour's exposure to yolk obtained from embryonated eggs up to the 12th day of incubation, 66–68% by albumen from eggs up to the 6th day of incubation, 35–69% by allantoic fluid and 43–56% by amniotic fluid from embryos 8–18 days old, and 28–61% by serum from embryos 12–18 days old. *S. senftenberg* was not killed by these fluids. —M.G.G.

Walker, J. H. C. (1960). **The broiler industry —transmission of Salmonella infection.** — Roy. Soc. Hlth J. **80,** 142-144 & 145. [Discussion: pp. 151.] **55**

The present methods of production and marketing of broilers and their possible effects on public health are discussed. Salmonella are comparatively common in poultry, but the two main types, *S. pullorum* and *gallinarum,* have been reported only rarely in man. Recently an increase in the incidence of other serotypes has been observed and the use of antibiotics in broilers' rations is resulting in the emergence of resistant strains which may cause an increase in the carrier rate and which, if contamination occurs, may multiply more rapidly in carcasses.—A. Ackroyd.

Roberts, R. M. & Philip, J. R. (1960). **The vaginal tampon test in the diagnosis of brucellosis and some comparisons with two vaginal mucus tests.**—Res. vet. Sci. **1,** 328-337. [Authors' summary modified.] **56**

Subcutaneous vaccination with Strain 19 is shown to produce demonstrable brucella agglutinins in material absorbed by vaginal tampon and, to a less extent, in vaginal mucus. In groups of cattle vaccinated experimentally, the presence of agglutinins in the vagina appears to be related to the amount of serum agglutinin. In contrast, agglutinins were much more readily demonstrable in similar materials from naturally infected animals irrespective of the serum agglutination titre.

Some animals with low or negative serum titres in a known infected unvaccinated herd had readily demonstrable agglutinins in vaginal material.

Ferreira de Abreu, E. & Mário, R. O. (1960). A sero-aglutinação nos soros fortemente hemolisados. **[Agglutination tests on haemolysed blood samples: precipitation of haemoglobin by phenol.]**—An. Serv. Vet. Indust. anim., Moçambique No. 6 pp. 187-194. [Summary in English.] **57**

Samples received at the laboratory in a haemolysed state were centrifuged for 5 min. at 2,000 r.p.m. A 1 : 5 dilution was prepared by adding 1·6 ml. normal saline containing 0·6% phenol to 0·4 ml. serum. The mixture was heated for an hour at 40–45°C., then it was again centrifuged. Further dilutions were made and brucella antigen was added. Reliable results were claimed.—R.M.

Glawischnig, E. (1960). Der Agglutinationstiter gegen Brucella abortus nach Aderlass und Bluttransfusion beim Rinde. **[The Brucella abortus agglutination titre after bleeding and blood transfusion in cattle.]**—Wien. tierärztl. Mschr. **47,** 334-341. [Summaries in English, French and Italian.] **58**

Collection of 5–35 litres of blood from 10 cows with positive or doubtful *Br. abortus* agglutination titres had no influence on the titres during an observation period of about 31 days. Two negative cows became positive immediately after injection of positive blood. The titre of one cow became negative again after 20 days, and a doubtful titre persisted for at least 2 months in the other.—M.G.G.

Lall, H. K. & Bakshi, S. N. (1960). **Studies on brucellosis.**—Indian vet. J. **37,** 309-319. [Authors' summary modified.] **59**

A fairly large number of cows with a history of abortion had failed to show positive sero-agglutinin titres against brucella antigen.

Microscopic, cultural and serological examination of the animals at the time of

abortion revealed that most of the abortions were due to brucella infection. Ascending serum titres were recorded in some of the animals which later aborted.

McEwen strain 544, local strain 137/23 and Strain 19 could not be isolated six weeks after inoculation from the spleen of g.pigs, inoculated with 10,000 organisms subcutaneously.

The agglutinogenic behaviour of the local strain 137/23 was similar to that of McEwen strain 544.

Ulbrich, F. & Wiegand, D. (1960). Vergleichende experimentelle Untersuchungen an Rindern über die Wirksamkeit des Brucella-Lebendimpfstoffes "Stamm 19" und des Adsorbat-Totimpfstoffes "Sielbeck". **[Comparison of Strain 19 vaccine and a killed adsorbed vaccine in cattle.]**—Zbl. VetMed. **7,** 249-261. [Summaries in English, French and German.] **60**

Nine calves 3–4 months old inoculated with Sielbeck adsorbed vaccine and 11 calves 5–6 months old inoculated with Strain 19 were all infected conjunctivally in the fourth month of pregnancy with 15×10^6 organisms of *Br. abortus;* the adsorbed vaccine gave partial protection but appreciably less than Strain 19. —E.V.L.

Jacotot, H. & Vallée, A. (1960). Sur le pouvoir vaccinant des brucelles en phase R des souches Buck 19 et Zdrodovsky BA. **[Immunizing power of rough forms of Brucella abortus Strain 19.]**—Ann. Inst. Pasteur **98,** 360-366. [Summary in English.] **61**

Neither Strain 19 nor the Russian BA variant of Strain 19 immunized rats when rough forms of colony were used.—R.M.

Vershilova, P. A. & Grekova, N. A. (1960). **[Histochemical characteristics of macrophages from animals inoculated with Br. abortus Strain 19 or Br. melitensis.]** — J. Microbiol., Moscow No. 7 pp. 118-123. [In Russian. Summary in English.] **62**

Experiments on 68 g.pigs revealed that the amount of glycogen in the cytoplasm of macrophages was proportional to their phagocytic activity. Phagocytic activity was greater during the phase of generalization after inoculation of Strain 19-BA vaccine than during infection with *Br. melitensis,* but the macrophage reaction lasted longest (8 months) after infection because of the longer stay of virulent brucella in the body. Inclusions which reacted to a stain for polysaccharides were present between 12 hours and 8 months after inoculation of brucella.—R.M.

Watanabe, M., Yamano, T., Onchi, T. & Inui, S. (1960). **[Experimental infection of guinea-pigs with Brucella abortus. I. Correlations between distribution of brucella in the body, serum agglutinins, and hepatic lesions in early stages of infection.]**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 75-88. [In Japanese. Summary in English.] **63**

82 g.pigs were inoculated s/c with a mildly virulent or a highly virulent strain of *Br. abortus.* Brucella was demonstrated in the blood, lymph nodes and tissues in the first hour of infection. After a few hours the sinusoids contained small aggregates of polymorphs and/or Kupffer cells which later fused to form focal lesions. Proliferation of liver reticular cells appeared after 12 hours and was severe from the 4th day. Agglutinins appeared in the serum after 6–7 days. The titres were not related to the severity of the lesions.—M.G.G.

Schierholz, H. & Kaufmann, R. (1960). Experimente zur Virulenzbestimmung von Bangbakterien im Kleintierversuch. **[Guinea-pig tests for determining the virulence of Brucella abortus.]** — Zbl. Bakt. I. (Orig.) **179,** 509-521. [Summaries in English, French, Spanish and Russian. English summary modified.] **64**

Guinea-pigs were infected with 28 strains of different virulence and origin. A relationship between virulence, serological titre, and the number of brucella organisms injected could not be demonstrated. But it should be possible to obtain a precise virulence scale of brucella strains from their influence on the growth of g.pigs. The effects were small, however, and must be observed under very carefully standardized conditions.

Bendtsen, H. (1960). **Porcine brucellosis. Second report on the fifth outbreak of porcine brucellosis in Denmark.**—Nord. VetMed. **12,** 343-363. [In English. Summaries in German and Danish.] **65**

For the first report of this outbreak see *V.B.* **30,** 974. Since then sera from 385 hares shot in the neighbourhood of the infected farm were examined and 67 contained brucella agglutinins; 23 had lesions typical of brucellosis and *Br. suis* was isolated. Of 1,071 sows and boars slaughtered locally, 6% had brucella agglutinins in titres of 1 : 10. A litter

of 8 born to an infected sow was studied in detail. Positive agglutination tests were not given until they were 7 months old but at 9 months all reacted. Brucella lesions were found when they were slaughtered at 12 months of age.—R.M.

Siennicki, W., Przyłęcki, S., Basz, I., Cygankiewicz, M., Pióro, J. & Radziszewska, D. (1960). Występowanie brucelozy u pracowników zakładów mleczarskich i przetwórstwa mięsnego w woj. wrocławskim. [**Brucellosis in dairy and meat workers in Poland.**]—Med. Wet., Warszawa **16**, 267. [In Polish.] **66**

One out of 609 workers employed in 42 dairies and 7 out of 1,615 meat workers gave positive serological reactions and clinical symptoms of brucellosis were present in 2 cases (both meat workers).—M. Gitter.

Krčméry, V. (1960). Použitie trifenyltetrazólia na štúdium aktivity dehydrogenáz u brucel a listérií. I. Dehydrogenázová aktivita brucelových kmeňov. [**Use of triphenyl tetrazolium in the study of dehydrogenase activity of brucella and listeria. I. Brucella.**]—Vet. Čas. **9**, 326-331. [In Slovak. Summaries in English, French and German.] **67**

K. investigated the use of triphenyl tetrazolium chloride in qualitative and quantitative determination of dehydrogenase activity in 26 strains of *Brucella abortus*, 7 of *Br. melitensis*, 23 of *Br. suis*, 3 of *Br. intermedia* and 35 of *Erysipelothrix (Listeria) monocytogenes*, and concluded that the value of these tests for the typing of brucella was very limited.—E.G.

Willinger, H. (1960). Brucellose bei Feldhasen in Oesterreich. [**Brucellosis in hares in Austria.**]—Wien. tierärztl. Mschr. **47**, 661-669. [Summaries in English, French and Italian. English summary modified.] **68**

Brucellosis in hares has been observed in 6 European countries (Denmark, Germany, France, Roumania, Switzerland and Czechoslovakia). In Austria it was observed from 1957 to 1959. Strains were isolated from 7 hares and identified as *Br. suis* II (Thomsen).

Parnas, J. (1960). **Microbiological characteristics of 62 Brucella brucei strains of "suis" variety.**—Bull. Off. int. Epiz. **53**, 298-314. [In English. Summaries in French and Spanish.] **69**

Of 62 strains of *Brucella suis* from Polish and foreign sources 46 were typical (H_2S production and no growth in the presence of fuchsin). 8 were atypical and 7 intermediate. 14 strains did not produce H_2S. Urease activity was high in 60%, whilst catalase activity was high in 69·35%, moderate in 17·74% and low in the remainder. Phages were isolated from 8 strains, but no classification was possible by means of phages.

—A. Ackroyd.

Kemenes, F., Surján, J. & Vizy, L. (1960). Ujabb adatok a lovak ún. havivakságának leptospirosisos eredetéhez. [**Leptospira as the cause of periodic ophthalmia in horses.**] — Mag. állator. Lapja **15**, 253-257. [In Hungarian. Summaries in English and Russian.] **70**

To study the role of *Leptospira pomona* in equine periodic ophthalmia agglutination, complement-fixation and biological tests for *L. pomona* antibodies were carried out on the sera, vitreous humour and corpus vitreum of the eyes of 418 slaughtered horses. Of 52 horses whose eyes had obvious lesions 47 had antibodies in the vitreous humour and corpus vitreum, but only 40 had antibodies in the serum. Isolation of leptospira was unsuccessfully attempted from several affected eyes.

The sera and vitreous humour of 10 affected horses were further studied by electrophoresis. No correlation was found between the quantity of gamma globulin in the blood and its antibody titre, and the proportions of the globulin fractions in vitreous humour and blood were always different. In particular the globulin fraction in vitreous humour was considerably more homogenous than that in blood, suggesting either local specific antibody production or concentration and conservation of specific antibodies in the eye. That in some horses antibodies were found only in the eye and not in serum tends to support the first assumption and would also explain why 10–40% of horses affected by periodic ophthalmia have no antibodies in their sera.

Of the 366 seemingly unaffected horses the sera of 38 contained *L. pomona* antibodies but none had antibodies in the eyes, suggesting that some horses may contract the infection without any effect on the eye.—A. Sebesteny.

Soloshenko, I. Z. & Khorava, G. V. (1960). [**Leptospira carriers in dogs in the coastal region of the Black Sea.**] — J. Microbiol., Moscow No. 7 pp. 140-141. [In Russian.] **71**

Antibodies to *L. canicola* were present in 71 of 201 stray dogs in the Abkhazian republic, and to *L. icterohaemorrhagiae* in 12. Leptospires were seen in kidney suspension

from 20; there were no lesions in the kidneys. 14 strains of leptospira isolated from kidneys were all *L. canicola*.—R.M.

Yanagawa, R., Hiramune, T., Shimizu, T. & Ishii, S. (1960). **Infection and immunity in leptospirosis. II. Experimental L. icterohaemorrhagiae and L. autumnalis infection in piglets.**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 183-192. [In English. Summary in Japanese.] 72

26 piglets were infected by various routes with *L. icterohaemorrhagiae* or *L. autumnalis*. At slaughter 8–217 days later leptospira was isolated from the kidneys and/or urine of 10, but not from other organs and body fluids. Leptospiruria appeared from the 3rd week and was observed in 12 animals: in 8 on one occasion, in 2 for 5 and 7 weeks, and in 2 intermittently for 13 and 18 weeks. Serum agglutination-lysis titres reached a peak in the 2nd or 3rd week, then declined gradually. —M.G.G.

Lebeda, M. (1960). Změny krevního obrazu a jiné patofyziologické reakce po vakcinaci proti ikterohemorrhagické leptospiróze. **[Changes in the blood picture and other pathological and physiological reactions following vaccination against Leptospira icterohaemorrhagiae infection.]**—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. **5**, 267-280. [In Czech. Summaries in German and Russian.] 73

L. studied toxicity of adjuvants and minimum toxic and lethal doses of trypaflavine, carbolic acid, formolized, chinosol and freeze-dried *L. icterohaemorrhagiae* vaccines in dogs and pigs. Changes in the blood picture were temporary and almost within normal physiological limits. Lethal doses of such vaccines for mice were 260–400 times the normal immunizing dose. The main toxic factor was the adjuvants. There were considerable differences in antibody response in different species of animals to similar doses of vaccine/kg. body wt.—E.G.

Yanagawa, R., Hiramune, T., Shimizu, T., Fujita, J. & Ishii, S. (1960). **Experimental studies on infection and immunity in leptospirosis. IV. Quantitative studies on experimental Leptospira icterohaemorrhagiae and Leptospira autumnalis infection in mice.** — Jap. J. vet. Sci. **22**, 17-26. [In English. Summary in Japanese.] 74

In mice inoculated with 100 *L. icterohaemorrhagiae* (L.i) or *L. autumnalis* (L.a) organisms, though no clinical signs were evident, leptospires began to multiply in the blood after 3–4 days, reached a peak growth of 10^5 per ml. after 6–7 days, and had disappeared by the 9–11th day. Homologous antibody was detectable in the blood after 9–11 days; in the case of L.i, no leptospires were demonstrable in the blood after its appearance but L.a persisted for about 2 days. In other organs, multiplication was detected one day later than in the blood and except in the kidney, the growth curve was similar to that in the blood. In the kidney, growth of leptospires reached a peak about the 8th day, declined for a few days as homologous antibody increased and then in some cases, rose again to a plateau of 10^7 cells per g. for at least 13 weeks. Leptospires were frequently shed in the urine 3 weeks after inoculation. —A. Ackroyd.

Menges, R. W., Rosenquist, B. D. & Galton, M. M. (1960). **A method for the isolation of leptospires from voided urine by direct culture.**—J. Amer. vet. med. Ass. **137**, 313-316. [Authors' summary modified.] 75

Eleven dilutions of voided urine were prepared in buffered saline soln. with the same syringe, and one drop of each dilution was introduced into 5-ml. amounts of Fletcher's medium. *L. pomona* was isolated from 46 (79%) of 58 urine samples from 19 infected g.pigs. A pure culture was obtained from 42 samples. This technique should be of value in detecting leptospiral carriers among cattle, pigs and human patients.

Shutyaev, N. A. (1959). **[Survival of leptospires in water.]** — Sborn. nauch. Trud. Uzbek. Inst. Vet. **13**, 169-172. [In Russian.] 76

A leptospiral strain serologically related to *L. grippo-typhosa* was pathogenic for puppies and g.pigs after 336 days in water. After 976 days it caused high serological titres in rabbits infected i/p. A few other strains remained virulent after 1,318 days in water. —M.G.G.

Vysotskii, B. V. & Rakhilin, V. K. (1960). **[Examination of aquatic birds and turtles for leptospirosis.]**—J. Microbiol., Moscow No. 9 pp. 42-44. [In Russian.] 77

In a district where leptospirosis occurred among rodents, agglutination tests on sera from 104 wild ducks, 22 moorhens and 10

turtles gave negative results. Serum from one of 4 Siberian wild geese agglutinated *L. saxkoebing* at 1 : 400.—R.M.

Jacotot, H. & Vallée, A. (1960). Éléments d'enquête sérologique sur l'infection par Vibrio foetus en France. **[Serological survey of Vibrio fetus infection of man and animals in France.]**—Ann. Inst. Pasteur **98,** 601-604. [Summary in English.] **78**

Antibodies agglutinating *V. fetus* were found in over 90% of 594 adult pigs, 456 calves, 215 sheep, 316 fowls, and 212 monkeys recently imported from Guinea, in 10% of 102 pigeons and 201 rabbits, in 20% of 125 children and 30% of 525 adult human beings, but not in 96 unweaned piglets and 12 unweaned infants. The titres were significant only in 2·5% of the pigs, 1·4% of the sheep, 13% of the fowls, one monkey, and 2 adult human beings.—M.G.G.

Leaver, D. D. & Hart, I. H. (1960). **The diagnosis of bovine vibriosis in Victoria.**—Aust. vet. J. **36,** 337-342. [Authors' summary modified.] **79**

The efficacy of diagnostic methods for vibriosis was studied over three years in 41 herds. The vaginal mucus-agglutination test is reliable and the most useful method for routine diagnosis. However, culture of *Vibrio fetus* from vaginal mucus was successful, and may be of practical value for early diagnosis before agglutinins have developed. Complete serological variation of local strains of *V. fetus* from Weybridge strain 1980 was not responsible for false negative diagnosis, but the local strains, mainly because of poor growth on artificial media, were unsuitable for antigen production. Although *Brucella abortus* was present in some of the herds, and agglutinins were demonstrated in the vaginal mucus of 16 of 155 animals tested, the specificity of the vibrio vaginal mucus agglutination test, for herd diagnosis, was not affected. The breeding efficiency of herds may superficially appear normal at the chronic stage of vibriosis and careful investigation is essential.

Maestrone, G. & Coffin, D. (1960). Azione in vitro di chemioterapici ed antibiotici sulla flora batterica isolata in casi clinici di piccoli animali. **[Activity of chemotherapeutic agents and antibiotics on bacteria isolated from small animals.]**—Veterinaria, Milano **9,** 69-74. [Summaries in English, French, Spanish, German and Portuguese.] **80**

Bacteria isolated from 200 dogs with various diseases are listed and their sensitivity to antibiotics and chemotherapeutic agents is given in tabular form. Resistance to antibiotics was observed even in cases where antibiotics had not been administered. Penicillin and streptomycin, so widely used in veterinary practice, appeared to be losing their efficacy and care was advocated in the selection and administration of antibiotics in order to ensure the rapid destruction of the pathogen rather than partially inhibit its growth and so favour the emergence of resistant strains.—T.E.G.R.

Galati, P. (1960). Contributo alla conoscenza delle actinogranulomatosi animali con localizzazioni rare. **[Actinomycotic lesions in the peritoneum of an ox.]**—Veterinaria, Milano **9,** 122-123. **81**

Actinomycotic nodules, the size of a pea, occurring singly or in groups, covered areas of both surfaces of the peritoneum. The external iliac lymph nodes were also involved. Microscopic appearances are described. There are 3 photomicrographs.—T.E.G.R.

Vitéz, I. (1960). Nährböden zur Züchtung und Identifizierung von pathogenen Pilzen. **[Media for the cultivation and identification of pathogenic fungi.]**—Zbl. Bakt. I. (Orig.) **178,** 523-530. [Summaries in English, French, Spanish and Russian.] **82**

The media described were (1) a semi-synthetic medium; (2) a medium for isolation of fungi from pathological specimens, made up of meat extract, peptone, glucose, glycerin and inorganic salts; (3) malt extract; (4) maize extract; (5) potato agar.—R.M.

Otte, E. & Peck, E. F. (1960). **Observations on an outbreak of a contagious pleuropneumonia in goats in Ethiopia.**—Bull. epiz. Dis. Afr. **8,** 131-140. [Summary in French. Authors' summary modified.] **83**

In an outbreak of a contagious disease in a group of 63 goats in Addis Ababa, 40 died in three weeks. The disease was characterised by low fever, cough, nasal discharge, the common symptoms of pleuropneumonia, and later diarrhoea, abortion, nervous symptoms and sudden death; the generalized symptoms dominated the localized. The lesions were mainly those of pneumonia, pleurisy, pericarditis and peritonitis. The possibility of this disease belonging to the pleuropneumonia-agalactia group is discussed.

Larson, N. L. & Hill, E. G. (1960). **Amine formation and metabolic activity of micro-organisms in the ileum of young swine fed chlortetracycline.** — J. Bact. **80,** 188-192. [Authors' summary modified.] **84**

Amines extracted from the ileum contents of 2 groups of young pigs, one of which was fed a diet supplemented with 40 p.p.m. of chlortetracycline, were separated by paper chromatography and paper electrophoresis. A greater amount and variety of amines was obtained from the pigs not given chlortetracycline. Amines produced by decarboxylases from *Escherichia coli* were common to both groups, but smaller amounts were obtained from the group fed chlortetracycline. The metabolic activity of the microflora of the ileum *in vitro* declined when small amounts of chlortetracycline were added. Chlortetracycline may in this way contribute to thriftiness and well-being.

See also abstr. **295** (methods in use at the Commonwealth Mycological Institute); **296** (book, farm animals in health and disease).

DISEASES CAUSED BY PROTOZOAN PARASITES

Boehringer, E. G. & de Boehringer, I. K. (1960). Sobre la receptividad del cerdo al Trypanosoma equinum (Elmassiani 1901). **[Susceptibility of pigs to T. equinum.]** — Rev. Invest. Ganad. No. 8 pp. 37-40. **85**

During an outbreak of mal de caderas in horses in Argentina several pigs developed posterior paralysis of unknown cause. But experiments showed that pigs were not susceptible to *T. equinum* infection. After s/c or i/p inj. the parasite was present in the blood of pigs for up to 41 days; it could not be seen in smears, but the blood infected mice. It was concluded that pigs may act as temporary hosts of *T. equinum.*—R.M.

Desowitz, R. S. (1960). **Denaturant effect of basic trypanocidal drugs on the protein of cell-free trypanosomal extracts.** — Exp. Parasit. **9,** 233-238. [Author's summary modified.] **86**

The basic trypanocidal drugs, Berenil, antrycide dimethylsulphate, ethidium, and pentamidine, precipitated 50–65% of the protein present in cell-free extracts of trypanosomes. The precipitate was a complex of drug bound to the protein.

Suramin and tryparsamide did not precipitate the trypanosome protein.

Low concentrations of Berenil precipitated more of the protein of a Berenil-resistant strain than of a Berenil-sensitive strain.

The electrophoretic fractions of the trypanosome protein denatured by basic compounds are described.

The trypanosome protein–drug complex had prophylactic activity.

Romaniuk, J. (1959). Badania nad wpływem techniki pobierania nasienia na występowanie rzęsistków w ejakulatach buhajów zakażonych. **[Influence of the method of semen collection on the incidence of Trichomonas foetus in ejaculates from infected bulls.]**— Roczn. Nauk. rol. **69,** 287-296. [In Polish. Summaries in English and Russian.] **87**

Semen samples were collected from 19 bulls infected with *Tr. foetus.* 36 samples were taken correctly, *i.e.,* preventing the flow of semen from the lumen of the artificial vagina into the collecting tube, while 28 samples were allowed to be contaminated by semen deposits in the artificial vagina. Every ejaculate was divided into 0·25 ml. lots which were inoculated on Schneider medium and incubated for 8 days at 37°C. Of 517 cultures made from samples collected in the proper way 5·2% and of 214 collected incorrectly 33·7% yielded *Tr. foetus.*—M. Gitter.

Ikeda, M. (1960). **[Factors necessary for E. tenella infection of the chicken. VI. Excystation of oocysts. VII. The infective form of oocysts.]**—Jap. J. vet. Sci. **22,** 27-41 & 111-122. [In Japanese. Summaries in English.] **88**

In hanging-drop preparations excystation of oocysts of *E. tenella* was induced by the action of pancreas preparations having high tryptic activity. Liberation of sporozoites occurred through micropyles of the sporocyst and the oocyst as a result of active and spontaneous movements.

Fowls became infected only by ingesting sporulated oocysts (containing sporocysts). Unsegmented oocysts did not sporulate in the gut.—A. Ackroyd.

Erasmus, J., Scott, M. L. & Levine, P. P. (1960). **A relationship between coccidiosis and vitamin A nutrition in chickens.**—Poult. Sci. **39,** 565-572. **89**

Experimentally infected chicks given 8,000 I.U. of vitamin A/lb. of food regained appetite and grew more rapidly than those given 800 I.U. On high levels of vitamin A

liver storage was higher in infected than in uninfected chicks. Crystalline beta-carotene (plus an antioxidant) was not as effective as stabilized vitamin A in maintaining appetite, growth rate and liver storage. The severity of infection was not affected by the level of vitamin A but recovery was enhanced by high levels. Results indicated that deficiency ataxia occurred only when the liver storage of vitamin A fell to below 0·8–0·9 I.U./g. of liver, whether this was due to deficiency of the vitamin in the diet or to reduced liver storage caused by coccidiosis.—T.E.G.R.

Vallejo, L. & Rostom, V. H. A. (1959). Anaplasmosis aguda en campos libres de garrapatas. Tratamiento con tetraciclina. **[Acute anaplasmosis in fields free from ticks. Tetracycline therapy.]**—Rev. Med. vet., B. Aires **40,** 159-163. **90**

Outbreaks of acute anaplasmosis in cattle in fields free from ticks were considered to have been caused by biting flies transmitting the disease from tick-infested cattle a few kilometres away. Most of the animals were cured by i/m injections of tetracycline and symptomatic treatment.—M.G.G.

Guillo, B. & Desmonts, G. (1960). Diagnostic sérologique de la toxoplasmose. Essai d'application aux animaux de boucherie. **[Serological diagnosis of toxoplasmosis in animals used for food.]**—Rec. Méd. vét. **136,** 383-398. **91**

An important question, to which there has as yet been no satisfactory answer, concerns the interpretation of serological tests for toxoplasmosis in animals. How soon after infection do antibody titres rise? What height do they reach? When and at what rate do they fall? The authors attempted to answer these by the artificial infection and subsequent study of 2 sheep, 2 pigs, a cow and a mare. One pig was infected by feeding to it the carcass of a toxoplasma infected mouse; the other animals by subcutaneous inoculation. The RH strain was used.

Unfortunately the graph on p. 392 is wrong. From corrected information supplied by Dr. Desmonts to the abstractor the dye test antibody results may be summarized as follows:—Sheep—rise in one week to a titre of 1/1,000; maximum (1/10,000) in 3 to 5 weeks; decline after 12 weeks; at 25 weeks titre 1/2,000. Pig—rise in one week to a titre of 1/100; in 2 weeks to 1/1,000–1/2,500; at 29 weeks 1/250. Cow—rise in one week to a titre of 1/500; maximum (1/2,500) reached in 2 weeks; rapid decline after 3 weeks; at 12 weeks 1/25; at 28 weeks 1/1. Mare—rise in 2 weeks to a titre of 1/100; maximum (1/500) at 4 weeks; thereafter decline to 1/100 at 30 weeks.

It will be seen that the cow, although it developed antibody to high titre, retained this for only a short time. Hence although, in an examination of animal sera the authors found the following percentage of reactions in the dye test for toxoplasmosis at a titre of 1/100 or more—sheep 31%, pigs 5%, cattle 0%, horses 0%, they did not feel justified in concluding that cattle were less frequently infected than sheep. [This article has already been abstracted (*V.B.* **30,** abst. 3212) but as the graph on p.392 of the original article is not correct an amended abstract is now published.]—C. P. Beattie.

Abou Akkada, A. R. & Howard, B. H. (1960). **The biochemistry of rumen protozoa. III. The carbohydrate metabolism of Entodinium.** —Biochem. J. **76,** 445-451. **92**

Active suspensions, consisting almost wholly of *Entodinium caudatum,* and free from bacteria, were obtained from the rumen liquor of a sheep. It was concluded that this organism satisfies its carbohydrate requirements solely by the ingestion of granular starch.—R.M.

See also abst. 296 (book, farm animals in health and disease).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Libeau, J. (1960). **Foot and mouth disease in Africa south of the Sahara—the present position.**—Bull. epiz. Dis. Afr. **8,** 152-158. [In French pp. 141-158.] [Author's summary modified.] **93**

In Africa foot and mouth disease has a special significance due to several factors not relevant in Europe. Aetiologically, the occurrence not only of the three classical types of virus but also of three South African types, increases the chance of outbreaks and complicates prophylactic measures.

The imperfectly understood epidemiology of the disease in game living in close contact with livestock, the possibility of persistence of virus in wild animals and the difficulties of

obtaining reliable evidence about the disease in such hosts, contribute to the complexity of the problem.

Economically, the importance of the disease varies with the evolution of the territory concerned and the nature of its external markets. Control must vary with the economic value of the national herd.

Dimopoullos, G. T. (1960). **Effects of physical environment on the virus of foot-and-mouth disease.** — Ann. N.Y. Acad. Sci. **83**, 706-726. **94**

D. reviewed the literature including the early work on the effects of physical agents (non-ionizing radiation, ultrasonic energy, pH, desiccation and heat) on the virus of F. & M. disease. When infected tissue suspensions were heated to between 56° and 70°C. for as long as 6–24 hours, infectivity was often detected in animals inoculated with virus dilutions but not in those given undiluted material. This phenomenon was particularly in evidence at the lower temperatures. The volume and route of inoculation were extremely important in the determination of the thermal death point of the virus. Only when heated at 85°C. for 6 hours was material (inoculated into steers in 50 ml. doses subcutaneously or intramuscularly or in 5 ml. doses intradermolingually) found to have no infectivity. This material had lost all antigenic activity. It has also been reported that meat from infected animals is not rendered free from virus by the usual procedures of ripening, boning, salting and storage.

—A. Ackroyd.

Veckenstedt, A. & Fischer, K. (1960). Zum Problem der Anpassung des Maul-und-Klauenseuche-Standard-A-Virus an das Zentralnervensystem der Maus. III. Mitteilung: Abhängigkeit von Anpassungsgrad und Verhalten im Zentralnervensystem kleiner Laboratoriumstiere. **[Adaptation of foot and mouth disease virus to the central nervous system of mice. III. Action of adapted virus on other laboratory animals.]** — Arch. exp. VetMed. **14**, 160-183. **95**

The adapted virus attacked the central nervous system of young g.pigs, rats and hamsters and in most cases did not damage epithelium or muscle.—R.M.

Palacios, C. & Fuentes, R. A. (1960). Investigaciones sobre avianizacion del virus de la fiebre aftosa tipo O Vallée, cepa Lara de Venezuela. **[Immunogenicity of an avianized strain of foot and mouth disease virus, type O.]**—Bull. Off. int. Epiz. **53**, 611-614. [In Spanish.] [In French pp. 615-618.] **96**

A Venezuelan strain of the virus underwent 95 passages in day-old chicks followed by 15 in 9-day-old chick embryos. Of 18 cattle inoculated by various routes with virus of the 4th or 6th passage in embryos, only 2 developed generalized lesions, and 14 were subsequently immune to virulent virus. But all of 6 piglets inoculated i/m with virus of the 6th embryo passage and 4 of 6 in-contact piglets developed typical F. & M. disease.

—M.G.G.

Williams, H. E. (1960). **Bat transmitted paralytic rabies in Trinidad.**—Canad. vet. J. **1**, 20-24 & 45-50. **97**

A discussion of the literature, with reference to vaccination of farm livestock in Trinidad.—R.M.

Ressang, A. A. (1960). **Rabies—the incurable Indonesian wound.** — Commun. vet., Bogor **4**, 1-24. [In English.] **98**

Suggestions were made for a national campaign, lasting 3 years, for the eradication of rabies in Indonesia, where it is widespread. These included the destruction of stray dogs, the main source of the disease, compulsory vaccination of dogs, quarantine of imported dogs, restriction of the transport of dogs and other animals that transmit rabies, and large-scale publicity for the campaign.—M.G.G.

Kuwert, E. & Olechnowitz, A. F. (1960). Vergleichende serologische und elektrophoretische Untersuchungen an rabiziden Hundehyperimmunseren. **[Comparative serological and electrophoretic studies on serum from dogs hyperimmunized against rabies.]** — Arch. exp. VetMed. **14**, 191-197. **99**

The average concentration of globulin fraction 8 in the serum of 14 dogs increased during hyperimmunization against rabies.

—M.G.G.

Grillo Torrado, J. M. & Giacosa de Crescini, A. M. (1960). Estudio sobre el poder inmunogeno de sobrenadantes de vacunas antirrabicas cloroformadas. **[Immunizing properties of supernatant fluid from chloroform rabies vaccine.]** — Rev. vet. venez. **8**, 284-290. **100**

Supernatant fluid obtained from chloroform rabies vaccine by centrifugation at 12,500 r.p.m. for 10 min. in a "Sharples" centrifuge immunized mice almost as well as the original vaccine, but supernatant obtained

by centrifugation at 3,000 r.p.m. for half an hour in a horizontal centrifuge was of no value. The immunizing power of the sediments re-suspended in physiological soln. was comparable to that of the original vaccine.
—M.G.G.

Wolff, E. & de Laforest, P. G. (1960). Sur les lésions histopathologiques spécifiques provoquées par le virus de la variole aviaire dans des explants de peau embryonnaire de poulet en culture d'organe in vitro. **[Specific lesions caused by fowl pox virus in explants of skin from chick embryos.]** — Ann. Inst. Pasteur **98**, 325-334. [Summary in English.] **101**

Fowl pox virus cultivated in explants of skin from chick embryos 8–12 days old caused changes similar to those seen in birds infected cutaneously :—hyperplastic thickening of the epidermis, the cells of which contained Bollinger bodies. The virus underwent 15 passages in skin explants in 5 months.
—M.G.G.

I. Darlington, C. D. (1960). **Symposium on the evolution of arborvirus diseases. I. Origin and evolution of viruses.** — Trans. R. Soc. trop. Med. Hyg. **54**, 90-96. **102**

II. Mattingly, P. F. (1960). **Symposium on the evolution of arborvirus diseases. II. Ecological aspects of the evolution of mosquito-borne virus diseases.** — Ibid. 97-112. **103**

III. Smith, C. E. G. (1960). **Symposium on the evolution of arborvirus diseases. III. Factors in the past and future evolution of the arborviruses.**—Ibid. 113-129. **104**

I. The author discusses the diversity of viruses, the most rapidly evolving of the parasites, as being dependent upon not only form and habit but also upon a genetic system of variation and reproduction. This system introduces problems that are not encountered in the higher organisms.

As viruses can be classified into DNA and RNA types, it is suggested that there is either evolutionary distinction from the beginning or that they originate from separate parts of the host cell. Consideration has been given to the possible role that vectors could play in transmitting something which behaves as nucleoprotein in one organism but as virus in another.

Types of latency and an alternation of heredity with infectivity of certain cell constituents are evolutionary questions concerning the appearance of viruses which the author has attempted to explain.

II. It seems that not less than 40 of the known arthropod-borne viruses are carried by mosquitoes. M. presents evidence which suggests that mosquito-borne viruses arose in their arthropod vectors and that this is related to the evolution of the blood-sucking habit of mosquitoes.

It is probable, on serological evidence, that arborviruses have evolved as groups. The group B viruses have been discussed in more detail in respect of their ecology and probable evolution with the hypothesis that West Nile virus is the most primitive of the group.

The overall picture given is of a group of viruses, Culex-borne and closely associated with birds and the subtropics, which has gradually spread to other areas and habitats involving other hosts and other vectors. The viruses have become modified in the process.

III. S. reviewed the extent of present knowledge concerning the arthropod-borne viruses, of which there are now 74, in relation to evolution. He discusses the geographical distribution, maintenance in nature and also man-made changes which may result in altered virus virulence. Of these the most important are probably those changes brought about by man. Changes in populations of arthropods can occur rapidly and the widespread use of insecticides can prove as potentially dangerous as it is beneficial.

Other virological factors which give rise to virus variation, like antigenic change, changes in host range and virulence and the interpretation of data concerning new isolates, are dealt with. Possible lines of future research are suggested including studies on the genetic differences within arthropod species and the behaviour of viruses in arthropods on a quantitative basis.—J. H. Darbyshire.

Salk, J. E. (1960). **Persistence of immunity after administration of formalin-treated poliovirus vaccine.**—Lancet, October 1st, 715-723. [Author's conclusions modified.] **105**

These studies on immunization with formalin-treated virus antigens were begun on the assumption that two or more doses of vaccine would always be required for protection against poliomyelitis paralysis, but experience now suggests that lasting protection against the disease should be attainable with a single dose.

Bettinotti, C. M. & Aguirre, H. (1960). Aislamiento del virus de la encefalomielitis

tipo "este", en un equino de Cordoba (R.A.). [**Isolation of Eastern encephalomyelitis virus from a horse in Argentina.**]—Gac. vet., B. Aires **22**, 182-187. [Summary in English.] **106**

It was stated to be the first time that the Eastern type of virus had been isolated in Argentina.—R.M.

Villa, L. J., Olrog, C. C., de Perez, C. B. & Vega, A. E. M. (1960). Detección de anticuerpos neutralizantes para virus de encefalomielitis equina oeste en patos silvestres en la República Argentina. [**Western equine encephalomyelitis: neutralizing antibodies in wild ducks in Argentina.**] — Rev. Invest. Ganad. No. 8 pp. 13-26. [Summaries in English, French and German.] **107**

Neutralizing antibodies were found in serum of the ducks *Netta peposaca; Anas versicolor, sibilatrix, platalen* and *spinicauda,* which breed in Argentina and migrate to neighbouring countries. Possible migration routes of these species were studied.—R.M.

Zakopal, J. (1960). Praktický význam Heinzových t'ělisek v erytrocytech v diagnostice infekční anémie koní. [**Heinz bodies in the diagnosis of equine infectious anaemia.**]—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. **5**, 307-316. [In Czech. Summaries in English and Russian.] **108**

Based on the examination of blood samples from 31 healthy horses, 132 horses with various internal diseases, 2 horses with acute and 106 with suspected equine infectious anaemia, Z. concluded that when the number of Heinz bodies exceeds 30 per thousand erythrocytes, equine infectious anaemia may be suspected. The effect of late pregnancy on the number of Heinz bodies has not yet been studied.—E.G.

Watanabe, S. (1960). [**Studies on equine infectious anaemia virus in tissue culture. I & II.**]—Jap. J. vet. Sci. **22**, 55-66 & 79-88. [In Japanese. Summaries in English.] **109**

Good growth of spleen, kidney and lymph node from embryo horse and, if fresh tissue was used, from young and adult horses was obtained in tissue cultures by the plasma clotting method using synthetic medium 199 and cattle serum in the ratio of 7:3. Growth of testis, lung and bone marrow was sometimes good, but that of liver and heart was unsatisfactory. Epithelial cells of kidney and lungs were successfully cultured by the monolayer tissue culture method by trypinization. Cell growth could be delayed by placing the culture in a cold room.

No specific changes occurred in horse embryo tissue cultures inoculated with blood from horses with equine infectious anaemia, but culture fluid from a second serial transfer caused a rise in temperature in a young horse from the 15th–20th day after s/c inoculation, whilst that from a fifth serial transfer caused fever, a decrease in the number of r.b.c. and the appearance of siderocytes.—A. Ackroyd.

Bartha, A. (1960). Vizsgálatok a hurutos lóinfluenza vírusának virulenciá-járól. [**Virulence of the virus of equine influenza.**] — Mag. állator. Lapja **15**, 252-253. [In Hungarian. Summaries in English and Russian.] **110**

To study the difference in virulence of the virus strains isolated from cases of equine influenza and of abortion, horses aged 4–7 years (mainly castrated males) were infected i/v, s/c or into the pharynx with influenza and abortion strains. The animals infected with the influenza strain had a rise in temperature of 2–3°C. after 3 days with some or all of the clinical signs of equine influenza; those infected with the abortion strain responded after 5 days with a temperature rise of 0·5–2°C. only.

It was, however, shown by passaging the virus strain of equine abortion through 6 horses by a series of s/c injections of 5 ml. blood, that this strain may gradually become as virulent as the influenza strain.

—A. Sebesteny.

Huygelen, C. (1960). **Failure to demonstrate agglutination of red blood cells by rinderpest virus.**—Bull. epiz. Dis. Afr. **8**, 121-122. [In English. In French. pp. 123-125. Author's summary modified.] **111**

In both direct and indirect haemagglutination tests with rinderpest virus no haemagglutinating properties were demonstrable.

Boulanger, P. (1960). **Technique of a modified direct complement-fixation test for viral antibodies in heat inactivated cattle serum.**—Canad. J. comp. Med. **24**, 262-269. [Author's summary modified.] **112**

A modified direct c.f. test for the demonstration of antibodies in heat-inactivated serum of cattle infected with vesicular stomatitis virus, is described in detail. The modification consists in adding 5% unheated normal bovine serum to the diluted complement before its

addition to the test. This normal bovine serum must be devoid of non-specific c.f. activity with the test antigen. Serum from normal cattle under one year of age is more satisfactory than that of older animals. This serum factor is heat-labile; it may be preserved frozen at −20°C. for about three weeks. It is hoped this test will prove useful in the study and diagnosis of other viral infections in cattle.

Huygelen, C. (1960). **Allerton virus, a cytopathogenic agent associated with lumpy skin disease. I. Propagation in tissue cultures of bovine and ovine testis cells.**—Zbl. VetMed. **7**, 664-670. [In English. Summaries in French, German and Spanish. English summary modified.] **113**

An agent isolated from skin lesions of cattle in Ruanda-Urundi caused cytopathic changes in tissue cultures of bovine and ovine testis cells: formation of large syncytia involving the whole cell sheet, occurrence of intranuclear inclusions of type A and rapid destruction of the monolayer. Neutralization tests with sera from experimentally infected rabbits and cattle confirmed that the virus belonged to group II (Allerton type) of cytopathic agents associated with lumpy skin disease of cattle.

Noice, F. & Schipper, I. A. (1959). **Cortisone acetate as a biological stressor.**—Proc. Minn. Acad. Sci. **27**, 181-183. [Authors' summary modified.] **114**

A virus-like agent was isolated from cattle with typical mucosal disease. Laboratory rabbits having been pretreated with cortisone acetate, developed ulcers and/or haemorrhage of the gastric mucosa upon injection of this agent. Control rabbits that received the agent or cortisone alone did not develop such lesions.

Gmitter, J. (1960). Vel'ké patogénne zoovírusy izolované z broncho-pneumónií a pneumónií od havädzieho dobytka na Slovensku patriace pravdepodobne do skupiny Rickettsiaformis, resp. k tzv. Néo-rickettsiam. **[Large viruses, probably of the neorickettsial group, isolated from cattle with respiratory diseases in Slovakia.]** — Sborn. čes. Akad. zemědělsk. Věd, vet. Med. **5**, 457-462. [In Slovak. Summaries in German and Russian.] **115**

In Q fever investigations in Slovakia, nine strains of a large, apparently pneumotropic virus, resembling "neorickettsia" of Giroud [*V.B.* **28**, 1450–1452 & 3257; **30**, 1447] were isolated from lung lesions of adult cattle, calves and one sheep. G.pigs and mice were susceptible to intranasal infection. The virus was easily propagated in the yolk sac of chick embryos. During an outbreak affecting a herd of 85 cattle, the virus was isolated from blood and milk of affected cows.—E.G.

Ogňanov, D., Charalambijev, C., Popov, T. & Nikolajev, K. (1960). Vírusová etiológia potratov u oviec v Bulharsku. **[Virus abortion in sheep in Bulgaria.]**—Vet. Čas. **9**, 321-325. [In Slovak. Summaries in English, French and German.] **116**

In Bulgaria, 49 of about 180 ewes aged two years and more, aborted and others had retention of the placenta. Some ewes gave birth to lambs affected with posterior paralysis, which as a rule, was fatal. None of the ewes had aborted in previous pregnancies. Highest incidence of abortion was towards the end of December and beginning of January. One ram, the semen of which had been used in artificial insemination, had recovered from serious epididymitis after penicillin treatment. Examination for *Salmonella abortus ovis, Erysipelothrix monocytogenes, Vibrio fetus, Rickettsia burneti,* leptospira and toxoplasma was negative. The virus was demonstrated in placental smears in the form of intracellular inclusions or extracellular elementary bodies, measuring about 300 mμ. Diagnosis was confirmed by the complement-fixation test and virus isolation in mice.—E.G.

Rubaj, B. & Pinkiewicz, E. (1960). Poziom potasu w surowicy krwi a patogeneza żółtaczki w przebiegu ostrej postaci pomoru świń. **[Serum potassium level in pigs and the pathogenesis of icterus in acute swine fever.]**—Med. Wet., Warszawa **16**, 393-398. [In Polish. Summaries in English, French, German and Russian.] **117**

24 pigs weighing 50–60 kg. were experimentally infected with an American strain of swine fever virus. R.b.c. counts, haemoglobin, bilirubin and potassium estimations were carried out daily from one day before to six days after infection. Histological and histochemical examinations were carried out on livers and spleens of all pigs. There was no relationship between the level of potassium, the breakdown of r.b.c. and the degree of icterus. The authors could not find evidence of haemolytic jaundice as reported by Matthias & Schmidt [*Arch. exp. VetMed.* **11**, 519–537 (1957)].—M. Gitter.

Zadura, J. (1959). Zmiany anatomopatologiczne w śledzionie przy pomorze świń. **[Spleen lesions in swine fever.]** — Roczn. Nauk rol. **69,** 245-268. [In Polish. Summaries in English and Russian.] **118**

A more detailed report of work already published elsewhere [see *V.B.* **29,** 1772].

—M. Gitter.

Matthias, D. (1960). Das histologische Verhalten der Herzmuskulatur bei Schweinepest. **[Histology of heart muscle in swine fever.]**— Arch. exp. VetMed. **14,** 111-122. **119**

Hearts were examined from 26 pigs killed on the point of death after i/m inj. of the virus. Sections were stained by conventional methods and also by the thionin method of Feyrter (1955). The conventional methods failed to demonstrate changes in the conduction system or the myocardium that could account for abnormalities in electrocardiographs made shortly before death. But the thionin method revealed chromotrophic lipoid degeneration of heart muscle, with in most cases, swelling and breakdown of perinuclear sarcosomes. Inclusion bodies were present in nuclei of heart muscle fibres and in the renal tubules. These changes were regarded as evidence of disordered metabolism.—R.M.

Janowski, H., Mierzejewska, M. & Żuliński, T. (1960). Odczyny immunobiologiczne u królików i świń szczepionych lapinizowanym szczepem wirusa pomoru świń. **[Immune-biological reactions in rabbits and pigs inoculated with lapinized swine fever virus.]** — Med. Wet., Warszawa **16,** 452-459. [In Polish. Summaries in English, French, German and Russian.] **120**

The virus multiplied rapidly in rabbits and pyrexia was noted in 237 out of 288 (82%) on the day after inoculation. Later, fall in the w.b.c. count, fall in gamma globulin content of the serum and degenerative changes and ecchymoses in internal organs were recorded. Pyrexia was also noted in 84 out of 289 pigs (29·1%). Similar reactions occurred in pigs but more slowly and in a milder form and there was no fall in gamma globulin.

—M. Gitter.

Hayashi, N., Kawakubo, A., Matsuzawa, H., Tomizawa, K. & Nakamura, J. (1960). **Propagation of hog cholera virus in tissue culture and its application to vaccine. I. Propagation of the virus in tissue culture.**—Amer. J. vet. Res. **21,** 591-596. **121**

Based on pilot experiments using Newcastle disease virus, high titres of swine fever virus were obtained most economically by propagating the virus in 500 ml. bottles in a 10% concentration of adult pig spleen fragments fixed to rice paper suspended in Tyrode's solution with 10% normal pig serum and antibiotics, and incubated on a rolling drum. Air was allowed to pass freely through the cotton wool plugs in the necks of the bottles and the culture medium was renewed twice daily for the first 2 days of the 3 day cultivation. Virus titres of whole cultures were about 10^{-8} which is comparable to that obtained from solid spleen tissue of artificially infected pigs.—A. Ackroyd.

Soekawa, M., Izawa, H., Matsumura, K., Nagano, T., Ito, M. & Lee, S. T. (1958). **Inactivation of hog cholera virus by the use of nitrogen mustard compounds.** — Kitasato Arch. **31,** 61-88. [In English.] **122**

Four nitrogen mustard compounds were compared with triethylenemelamine and crystal violet for their action on swine fever virus in pig blood, during 24 hours' incubation at 37°C. Inactivation and the immunogenic properties of the inactivated preparation were tested by inoculating pigs.

Reasons for the differing actions of the different nitrogen mustard compounds were discussed. Some were capable of inactivating the virus without destroying its immunogenicity, and so was triethylenemelamine.

—R.M.

Rodabaugh, D. E., Wright, H. B. & Elder, C. (1960). **Factors influencing immunity in hog cholera vaccination.** — J. Amer. vet. med. Ass. **136,** 617-621. **123**

Pigs on a protein deficient diet had severe reactions with several deaths when challenged with live swine fever virus at 75 and 145 days after vaccination with swine fever vaccine produced in pigs or rabbits, but vaccinated pigs fed a normal balanced ration survived challenge with very little reaction and no deaths. Reactions and death losses were greater in the group vaccinated with vaccine of swine origin. When four vaccinated pigs fed a balanced ration were challenged simultaneously with swine fever virus and *Salmonella cholerae-suis,* 3 died from swine fever.—A. Ackroyd.

Szent-Iványi, T. (1960). A fertőző sertésbénulás és az Aujeszky-féle betegség atípusos eseteinek diagnosztizálása a vírusnak egyrétegű vesehámtenyészetekben való kimutatásával.

[Diagnosis of atypical cases of Teschen disease and Aujeszky's disease by the use of pig kidney tissue cultures.] — Mag. állator. Lapja 15, 259-261. [In Hungarian. Summaries in English and Russian.] 124

An outbreak of an unusually mild form of Teschen disease—similar to Talfan disease as known in England—was observed in Hungary. Details of the symptoms, epidemiology and histological findings are given. Cultivation of the virus from the affected pigs was attempted in monolayer porcine kidney cell cultures; the technique is described in detail. The virus had a characteristic cytopathic effect on the tissue culture cells; this could be specifically inhibited by Teschen disease antiserum. Direct infection with the infective material of 4 rabbits intramuscularly and of 2 pigs intracerebrally and intranasally yielded negative results, but 2 pigs infected with the supernatant fluid of the sixth tissue culture passage of the virus had a transient rise of temperature and partial posterior paralysis.

Isolation of the virus of Aujeszky's disease in tissue cultures was also attempted on several occasions and again characteristic cytopathic effects were observed and specific inhibition tests could be carried out.

The use of tissue cultures for the isolation and identification of the viruses of Teschen disease and Aujeszky's disease is considered to be of great diagnostic value.

—A. Sebesteny.

Betts, A. O. (1960). **Studies on enteroviruses of the pig—VI. The relationship of the T80 strain of a swine polio-encephalomyelitis virus to some other viruses as shown by neutralization tests in tissue cultures.**—Res. vet. Sci. 1, 296-300. [Author's summary modified.] 125

In cross-neutralization tests in monolayer cultures of pig kidney epithelial cells the T80 strain of a swine polio-encephalomyelitis virus was not neutralized by immune sera of the following viruses: poliovirus types 1, 2 and 3, Coxsackie virus types A9 and B1 to B5, Echo virus types 1 to 14, canine hepatitis virus, and louping-ill virus. Neither did cross neutralization occur between either the T80 or the antigenically closely related T25A strain of this swine polio-encephalomyelitis virus and the viruses of Talfan and Teschen diseases. These results indicate that at least 2 immunologically distinct viruses can produce polioencephalomyelitis in pigs.

Menšík, J., Věžníková, D. & Zeman, J. (1960). Izolace hemaglutinujícího viru z CNS selat s neurologickými komplikacemi v průběhu chřipkové infekce. **[Isolation of a haemagglutinating virus from the central nervous system of piglets with a nervous form of influenza.]** — Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 5, 611-624. [In Czech. Summaries in English and Russian.] 126

Two strains of haemagglutinating virus were isolated from the c.n.s. of sucking piglets, which at the age of 4–5 weeks had developed nervous symptoms, after infection with influenza virus. The piglets were from an infected piggery and from an experimentally infected dam. P.M. there was meningitis, meningoencephalitis, mono- and polynuclear infiltration of the meninges, oedema of brain tissue, degenerative lesions in ganglion cells, nuclear pyknosis and vacuolized cytoplasm. The haemagglutinating property of the isolated strains was inhibited by sera from experimentally infected pigs and sera from naturally infected sows. The haemagglutinating strains were pathogenic for mice when inoculated into the nose. By alternating lung and brain passages in mice the virus retained its pathogenicity for the c.n.s. up to the 10th passage.—E.G.

Menšík, J. (1960). Tvorba a dynamika protilátek při chřipce prasat. I. Vliv kolostrálních protilátek na imunitní odpověď selat v prvních měsících života. **[Production and behaviour of swine influenza antibodies. I. Influence of colostral antibodies on immunity in piglets during early life.]** — Sborn. čes. Akad. zemědělsk. Věd, vet. Med. 5, 599-610. [In Czech. Summaries in English and Russian.] 127

Repeated massive doses of influenza virus injected s/c into new-born piglets did not influence the eventual fading out of those antibodies produced by subsequent ingestion of colostrum. Doses of live virus given to piglets 2–4 days old, accelerated antibody production. Experimental contact infection in piglets in which colostral antibodies had already disappeared, produced only an insignificant serological response. The cause of negative serological findings in infected herds may be associated with immunization of dams, maternal transfer of immunity and changes in the antigenic structure of the virus, possibly due to prolonged contact with an immune population.—E.G.

Akao, Y. (1960). **[Studies on myxovirus infection in pigs. Antibody in swine sera against myxovirus.]**—Jap. J. vet. Sci. **22,** 43-53. [In Japanese. Summary in English.] 128

In pig sera, a non-specific haemagglutination inhibitor was found against influenza A/Asia/57 virus which could be removed by periodate treatment but not by heating at 56°C. for 30 min. or by treatment with receptor destroying enzyme. No non-specific haemagglutination inhibitor was found against swine influenza virus or haemagglutinating virus of Japan. The complement-fixation test by Kolmer's modified method and the flocculation test could be carried out against all 3 viruses. No antibody against the Asian influenza virus could be found in the sera of pigs slaughtered in Tokyo or Osaka in 1957; a few sera had antibodies against swine influenza virus and H.V.J.—A. Ackroyd.

Taylor, P. F. (1960). **Avianised virus in the control of canine distemper.**—Aust. vet. J. **36,** 348-352. [Author's summary modified.] 129

Avianized distemper virus was used in pastoral dogs over three years. Observations were purely clinical. Of 333 dogs immunized, 6 developed clinical signs of distemper and 3 of these died. All 6 were in contact with infected dogs before vaccination. Of 33 clinical cases treated with anti-distemper serum 14 died or were destroyed, while of 24 cases treated with avianized vaccine 4 died, and the result in one case is unknown. Serum was used mainly in the first two years and vaccine in the third year. Control of outbreaks on seven properties by avianized virus or anti-distemper serum, or both, is described. In this area and at that time, avianized virus appeared satisfactory in prophylaxis, and valuable in treatment.

Reculard, P., Nicol, L., Girard, O., Corvazier, R., Cheyroux, M. & Sizaret, P. (1960). Étude du virus de Carré en cultures cellulaires. I. Culture du virus sur cellules embryonnaires de poulet. **[Study of dog distemper virus in cell cultures. I. Chick embryo cells.]**—Ann. Inst. Pasteur **98,** 344-350. [Summary in English.] 130

Distemper virus adapted to ferrets did not grow in chick embryo cells, but virus that had been adapted to chick embryos has so far undergone 36 passages in chick embryo cells. Antigenic properties were unaltered.—M.G.G.

Goret, P., Mornet, P., Gilbert, Y., Pilet, C. & Orth, G. (1960). Recherches sur l'immunisation croisée "maladie de Carré-peste bovine" chez le lapin. **[Cross immunity tests with dog distemper and rinderpest viruses in rabbits.]** — Ann. Inst. Pasteur **98,** 605-610. [Summary in English.] 131

Continuing their work on this subject [*V.B.* **28,** 1454 & **30,** 1067] the authors found that distemper virus did not immunize rabbits against lapinized rinderpest virus. Distemper hyerimmune serum neutralized lapinized rinderpest virus.—R.M.

Carlström, G. (1960). **Comparative studies on measles and distemper viruses.** — Acta paediatr. **48,** 25-32. [In English. Summaries in French, German and Spanish.] 132

Experiments in which the two viruses were adapted to unweaned mice showed that the viruses were immunologically related but antigenically different. [See also *V.B.* **29,** 3489.]

Bennette, J. G. (1960). **Isolation of a non-pathogenic tumour-destroying virus from mouse ascites.** — Nature, Lond. **187,** 72-73. 133

During investigations on ascites tumours in mice, aggregation and ultimately destruction of tumour cells was observed: this was due to an antigenic tumour-destroying agent which could be serially transmitted in sterile filtrates of washed tumour cells.

The agent multiplies and after a latent period will destroy the Krebs 2, Ehrlich, Sarcoma 37, Landschutz, BP/8 and Crocker ascites tumours. It is non-pathogenic for normal mice.—A. Ackroyd.

André, J. & Audebaud, G. (1960). Recherches sur la culture du virus de Newcastle et sur ses applications pratiques. **[Culture of Newcastle disease virus in monkey kidney cells.]** —Ann. Inst. Pasteur **98,** 829-845. [Summary in English.] 134

For diagnosis of Newcastle disease, the erythrocyte adsorption reaction described by Vogel & Shelkov in the case of influenza virus [*Science* **126,** 358 (1956)], gave better results than criteria based on cytopathic action or virus titration. When virus is present in cultured kidney cells, erythrocytes introduced into the cultures become adsorbed onto the cells and cannot be detached by washing.
—R.M.

Basova, N. N., Suchkov, Y. G., Gusev, V. M. & Rudnev, M. M. (1960). **[Psittacosis in**

wild and domestic birds in the Caucasus.]—J. Microbiol., Moscow No. 9 pp. 3-7. [In Russian. Summary in English.] **135**

Sera were collected from 263 birds of 17 species; 23 contained c.f. antibodies. Sera from 8 of 12 pigeons in a laboratory colony were also positive.—R.M.

Allison, A. C. & Valentine, R. C. (1960). **Virus particle adsorption. II. Adsorption of vaccinia and fowl plague viruses to cells in suspension. III. Adsorption of viruses by cell monolayers and effects of some variables on adsorption.** —Biochim. Biophys. Acta **40,** 393-399 & 400-410. [In English.] **136**

The adsorption of fowl plague virus labelled with radiophosphorus and vaccinia virus labelled with radio-iodine was studied. —R.M.

Shestochenko, M. A. (1960). **[Methods for diagnosis of Q fever in birds.]**—J. Microbiol., Moscow No. 9 pp. 25-30. [In Russian. Summary in English.] **137**

Tests on sera from artificially infected fowls and pigeons revealed that Luoto's capillary agglutination test gave reliable results, but the c.f. test did not.—R.M.

See also abst. **296** (book, farm animals in health and disease).

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Jaroslow, B. N. (1960). **Factors associated with initiation of the immune response.**—J. infect. Dis. **107,** 56-64. [Abst. from author's conclusions.] **138**

The author's basic proposition is that induction of antibody synthesis by the antigen can take place only during some specific stage in the mitotic cycle of the antibody-producing cell. This stage is probably late interphase, at the time of synthesis of new deoxyribonucleic acid. This proposition is based on an interpretation of studies of the effects of radiation on the immune mechanism and on nucleic acid synthesis.

Bangham, D. R. (1960). **The transmission of homologous serum proteins to the foetus and to the amniotic fluid in the rhesus monkey.** —J. Physiol. **153,** 265-289. [Part of author's summary.] **139**

The route of albumin and γ-globulins to the foetus is transplacental. The liquor plays an unimportant part, if any, in the transmission of these proteins to the foetus.

The histological features of the amnion and syncytial trophoblast of the placenta of the foetal monkey are closely similar to those of the entodermal lining of the yolk sac of the rabbit foetus and the entoderm of the suckling rat, sites at which selective transmission of proteins occurs. It appears probable that these two non-entodermal membranes of the foetal rhesus monkey are the sites responsible for the two instances of selective transmission observed in these experiments.

Gras, J. (1960). Le phénomène de l'inhibition d'anticorps circulants par hyperimmunisation. **[Inhibition of circulating antibodies by hyperimmunization.]** — Rev. Immunol. **24,** 354-366. **140**

Rabbits inoculated 2–3 times a week with small doses of human r.b.c. of group O, *Brucella abortus* Strain 19, or horse serum developed peak antibody titres in about 17–50 days (in one in 104 days), which then gradually declined to fluctuate at a low level in spite of continuing antigenic stimulation. The phenomenon was not due to immunological paralysis, since increasing the doses of antigen usually caused a slight increase of titre.—M.G.G.

Mullins, J. (1960). **Milk allergy.**—N.Z. vet. J. **8,** 68-69. **141**

An allergic condition, characterized by a generalized urticaria, dyspnoea, and sometimes abortion, was reported in a herd of Jersey cows at drying-off, immediately before calving, and occasionally at oestrus when the milk was not let down. It was induced experimentally in 2 cows by partial milking. Serological tests did not indicate that brucella antigen derived from the milk was a factor. Milking was an effective treatment [see also *V.B.* **27,** 2425].—M.G.G.

Uhr, J. W. (1960). **Development of delayed-type hypersensitivity in guinea pig embryos.** —Nature, Lond. **187,** 957-959. **142**

Embryos were injected 1–2 weeks before delivery with 1–10 μg. of protein antigen in 0·1 ml. adjuvant: new-born g.pigs were skin-tested on 1st day of life with 3 μg. of specific antigen. Reactions to diphtheria toxoid, ovalbumin or bovine serum albumin were elicited in 31 animals (of 83) during the first

5 days of life. Antibody was demonstrated in the serum as early as one week after birth. Histology of skin reactions was typical of 'tuberculin-type' skin reactions. A further experiment indicated that delayed-type hypersensitivity in new-born g.pigs was not the result of maternal sensitization and passive placental transfer.—E.V.L.

See also abstr. **14** (antibodies in animals immunized against anthrax); **18** (gel-diffusion test in TB.); **23** (properties of extracts of Johne's bacilli); **27-32** (swine erysipelas); **37** (pasteurellosis); **47-48** (immunochemistry of salmonella); **57-64** (brucellosis); **72-74** (leptospirosis); **96** (F. & M. disease); **99-100** (rabies); **105** (poliomyelitis vaccine); **107** (Western equine encephalomyelitis); **111** (rinderpest); **120-123** (swine fever); **127** (swine, influenza); **128** (myxovirus); **129** (distemper); **131** (cross immunity between distemper and rinderpest); **132** (distemper and measles); **155, 159-160** (helminths).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Jackson, J. B., Drummond, R. O., Buck, W. B. & Hunt, L. M. (1960). **Toxicity of organic phosphorus insecticides to horses.**—J. econ. Ent. **53**, 602-604. [Authors' abst. modified.] **143**

Tests were made on 48 horses to find the optimal dosage of some organic phosphorus insecticides for use against horse bots (Gasterophilidae). The animals were treated with Co-Ral, dimethoate, Dowco 105, Dowco 109, ronnel, Ruelene, DDVP, and Dipterex. The insecticides were administered by stomach tube, by feeding, and by intramuscular injection. For 7 days until they were killed, the horses were observed frequently and checked for whole blood cholinesterase activity. Although six of the animals had signs of toxicity during the observation period, only one had gastrointestinal congestion when examined P.M. Fourteen horses owned by ranchers were treated with Dipterex in feed, with no harmful effect. The problems of determining poisoning from phosphorus insecticides are discussed.

McPherson, E. A. (1960). **Sarcoptic mange in pigs.**—Vet. Rec. **72**, 869-870. [Author's summary.] **144**

The widespread occurrence of sarcoptic mange in pigs in Britain is demonstrated. The figures which for technical reasons must be regarded as minimal show that approximately one-fifth of the pigs and piggeries are infested. Half the bacon pigs at an abattoir were found to harbour external parasites.

Van Middelem, C. H., Genung, W. G., Kelsheimer, E. G., Kuitert, L. C. & Waites, R. E. (1960). **Toxaphene residues on pangolagrass.**—J. agric. Food Chem. **8**, 289-292. **145**

Toxaphene residues were determined on pangola grass 2 hours, and 3, 7 and 14 days after application. Three formulations and 2 dosage rates were tested in 3 different areas. On the 7th day residues were between 2·4 and 18·2 p.p.m., and on the 14th day between 1·3 and 12 p.p.m. As beef cattle may ingest 25 p.p.m. of toxaphene in the diet for 10 consecutive weeks without accumulating more than 7 p.p.m. in their fat, a 7-days interval was recommended between toxaphene application and grazing.—M.G.G.

Smith, C. T., Shaw, F., Lavigne, R., Archibald, J., Fenner, H. & Stern, D. (1960). **Residues of malathion on alfalfa and in milk and meat.** — J. econ. Ent. **53**, 495-496. [Authors' abst. modified.] **146**

Residues of malathion, applied at 1 lb. per acre to lucerne 11·4 inches tall, decreased from an average of 69 p.p.m. immediately after application to 0·25 p.p.m. 6 days later. Milch cows fed malathion at 8 p.p.m. for 3 weeks did not excrete the insecticide in milk, neither was it detectable in the blood, brain, liver, kidney, nor in the carcass meat when the animals were slaughtered at the conclusion of the experiment.

Chamberlain, W. F., Gatterdam, P. E. & Hopkins, D. E. (1960). **Metabolism of P^{32}-Delnav in cattle.** — J. econ. Ent. **53**, 672-675. [Authors' abst. modified.] **147**

Labelled Delnav (2, 3-*p*-dioxanedithiol *S*, *S*-bis (*O*, *O*-diethyl phosphorodithioate) was applied to one steer dermally and another orally. Analysis of blood, urine and faeces indicated that the insecticide was rapidly metabolized and excreted. After 7 days both animals had only trace amounts of radioactivity in the urine and faeces, but the elimination of 20·4% of the dermal treatment indicates efficient absorption of the insecticide in comparison with other organophosphorus insecticides.

See also abst. **90** (bovine anaplasmosis in tick-free area).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Malik, B. S., Rai, P. & Ahluwalia, S. S. (1959). **A note on helminths of the Indian elephant. I. Amphistomatous parasites.**—Indian J. vet. Sci. **29**, 11-17. [Authors' summary modified.] **148**

Three species of amphistomes, collected from an Indian elephant, were studied and assigned to the species *Pfenderius papillatus, Pfenderius heterocaeca* and *Pseudodiscus hawkesii.* The authors discussed previous literature on amphistomes from Indian elephants and pointed out omissions in earlier descriptions and diagrams, after giving brief accounts of the three species. They provided a key to the known species of *Pfenderius* and indicated the taxonomic position of *Pfenderius* and *Pseudodiscus* among the amphistomes.

Ueno, H., Watanabe, S. & Fujita, J. (1960). **[Studies on anthelmintics against the common liver fluke. II. Action of bithionol in cattle.]**—J. Jap. vet. med. Ass. **13**, 151-155. [In Japanese. Abst. from English summary.] **149**

All adult liver flukes were eradicated from 6 cows given a single dose of 35–55 mg. of bithionol per kg. body wt., and from one of 2 cows given 30 mg./kg. The drug was mixed with the food. About half of the flukes were killed in 5 cows given 20 mg./kg. In field trials in 150 cows, fasciola eggs disappeared from the faeces of 88% of cows given 35, 66% of cows given 30, and 43% of cows given 20 or two doses of 15 mg./kg. The optimum dose was considered to be 30–35 mg./kg.

—M.G.G.

Fukui, M. (1960). **[Studies on Moniezia expansa and its intermediate host. V. Removal of sheep tapeworms, M. expansa and M. benedeni, with bithionol and dichlorophen.]**—J. Jap. vet. med. Ass. **13**, 294-297. [In Japanese. Abst. from English summary.] **150**

Bithionol at 70 mg./kg. body wt. and dichlorophen at 150 mg./kg. were both very effective against tapeworms in sheep, and their toxicity for sheep and cattle was low.—R.M.

Enzie, F. D. & Colglazier, M. L. (1960). **Preliminary trials with bithionol against tapeworm infections in cats, dogs, sheep, and chickens.** — Amer. J. vet. Res. **21**, 628-630. **151**

Bithionol in a single dose of 100 mg./lb. of body weight removed all *Taenia* spp. from dogs and cats and all *Moniezia expansa* from a lamb. At 500 mg./kg. it removed all *Raillietina cesticillus* from 2 chickens.

—M.G.G.

Marsboom, R., Van Parys, O. & Brodsky, M. (1960). Contribution à l'étude des localisations préférentielles des cysticerques chez le gros bétail en Urundi. **[Localization within the body of cysticerci in large animals in Urundi.]**—Ann. Méd. vét. **104**, 191-196. **152**

Cysticerci were found in 1,724 (80.9%) of 2,128 slaughtered cattle in Urundi. 20 different sites were recorded. 13% of the infested sites were the crural muscles, followed by the heart (12·3%), tongue (12·2%), neck muscles (11·2%), foreleg muscles (9·9%), diaphragm (7%), adductor muscles of the thigh (6·9%), lungs (5·7%), sub-pleural region (5·5%), superficial masseter (4·8%), and oesophagus (2·7%).—M.G.G.

Münchberg, F. & Kniewallner, K. (1960). Zur Frage des Vorkommens lebender Trichinen in gefrorenem, gepökeltem und zubereitetem Schweinefleisch. **[Occurrence of viable trichinella in frozen, salted and prepared pork.]**—Wien. tierärztl. Mschr. **47**, 617-628. [Summaries in English, French and Italian. English summary modified.] **153**

Samples of trichinous pork were frozen, salted, roasted or fried. Living trichinae were demonstrated after freezing for 2–42 days, and after curing at +6° to +8°C. in brine for 14 to 22 days. Massive trichinosis was produced in rats by feeding fried or roasted pork.

Supperer, R. & Pfeiffer, H. (1960). Über die Strongyloidose der Kälber. **[Strongyloidosis in calves.]**—Wien. tierärztl. Mschr. **47**, 361-368. [Summaries in English, French and Italian.] **154**

Calves infected at the age of 4–5 weeks with 90,000–400,000 larvae of *Strongyloides papillosus* by application to the skin developed coughing, pallor of the mucous membranes and high egg counts in the faeces. They resisted re-infection 4 weeks later. An effective treatment for calves was a single oral dose of 90 mg. of "Neguvon" ("L 13/59", Dipterex) per kg. body wt., 75 mg./kg. being recommended for debilitated calves.—M.G.G.

Soulsby, E. J. L. (1960). **The use of the haemagglutination technique for the detection of antibodies in gastro-intestinal nematode infections of sheep. I. The tanned red cell technique. II. The red cell-linked antigen**

test.—Brit. vet. J. **116**, 302-315 & 315-321. [Author's summaries.] 155

I. Sera taken during the course of infection of sheep with *H. contortus* or *Trichostrongylus* spp. were examined by the haemagglutination and complement fixation techniques. No constant relationship was observed between the antibody levels indicated by these two techniques. Absorption tests indicated that generally the haemagglutinating antibody was distinct from that measured by complement fixation. Not only did the haemagglutination reaction differ from the complement fixation but different antigens, when used for haemagglutination showed different responses. The significance of these results is discussed.

II. A red cell-linked antigen system has been used successfully for the detection of incomplete antibodies to gastro-intestinal nematodes infecting sheep. Such antibodies were detected in serum, sometimes at a high level. No obvious relationship between the level of incomplete antibodies and resistance could be detected. Antibodies were detectable in extracts of lymph node but all tests on mucus samples from the abomasum and small intestine were negative.

Marquardt, W. C., Fritts, D. H., McAlpin, N. R. & Hawkins, W. W., Jr. (1960). **The activity of bephenium embonate against the free-living and adult stages of Nematodirus spathiger.**—J. Parasit. **46**, 42. 156

An average number of 37 adult *N. spathiger* was found in 7 lambs treated 5 days previously with 250 mg./kg. of bephenium embonate by mouth, compared with 2,007 in 6 untreated lambs. Eggs of nematode hatched in a saturated soln. of bephenium embonate, and the larvae were unharmed by 8 days' contact.—M.G.G.

Bearup, A. J. (1960). **Parasitic infection in cats in Sydney, with special reference to the occurrence of Ollulanus tricuspis.**—Aust. vet. J. **36**, 352-355. [Author's summary modified.] 157

Of 50 stray cats examined for parasites three were infected with *Ollulanus tricuspis*. This is considered evidence that the infection is well established in Australia.

An immature acanthocephalan, *Pseudoparrorchis hydromuris* found in the intestine of one cat, is the first record of the phylum in cats in Australia. The cat is probably an accidental host. A list of the parasites found and their incidence is given.

Jungmann, R. (1960). Über die Behandlung lungenwurmkranker Schafe mit Cyanacethydrazid unter besonderer Berücksichtigung der Umweltverhältnisse und der koprologischen Auswertung. [**Cyanacethydrazide treatment of lungworm infestation in sheep with reference to environmental and coprological evaluation.**]—Arch. exp. VetMed. **14**, 589-604. 158

Three groups of sheep carrying light to moderate infestations of *Dictyocaulus filaria* and *Muellerius capillaris* and very light infestations of *Protostrongylus rufescens* were treated with cyanacethydrazide at a dosage of 15 mg./kg. on three consecutive days. The output of the larvae of *D. filaria* in the faeces was reduced by 81–99% and of the larvae of *P. rufescens* by 85–90%.—J. F. Michel.

Oliver-González, J. (1960). **Histopathological and immunological observations after inoculation of substances isolated from the muscle and cuticle of Ascaris lumbricoides.** — J. infect. Dis. **107**, 94-99. 159

An account of the reactions of rats to i/p inj. of a polysaccharide prepared from muscle of the worm and also an extract of cuticle. The extract inhibited the apha-2 isoagglutinin of human blood. It was adsorbed onto tanned erythrocytes. Sera from 42 of 55 children with visceral larva migrans agglutinated these erythrocytes, compared with only 2 of 32 sera from unaffected children. The author suggested that isoagglutinin-like substances were the cause of primary hypersensitivity to various infectious agents.—R.M.

Biguet, J., Rosé, F. & Havez, R. (1960). Les possibilités d'application de l'immunoélectrophorèse à l'étude des fractions antigéniques des helminthes. [**Immunoelectrophoresis in the study of antigenic fractions of helminths.**] —C.R. Acad. Sci., Paris **251**, 982-984. 160

A preliminary study of the reaction between perivisceral fluid from *A. lumbricoides* or *A. equorum* and specific hyperimmune sera from rabbits.—R.M.

Forstner, M. J. (1960). Parasitologische Untersuchungen an der Kläranlage Mindelheim zur Beurteilung des Wurmbefalls von Weiderindern des Abwasserverregnungsgebietes. [**Parasitological examinations at a sewage works and the possibility of infestation of cattle on irrigated pastures.**] — Berl. Münch. tierärztl. Wschr. **73**, 161-164. [Summary in English.] 161

Sporadic cases of clinical gastro-

intestinal helminth infestation were reported in cattle fed grass or hay from meadows watered with effluent from a sewage works. Samples of raw sewage from the works contained eggs of *Ascaris, Neoascaris,* strongyles, *Enterobius, Trichuris* and *Moniezia,* but effluent from the settling tanks and samples of grass from the meadows were free from ova and larvae. It was concluded that treated sewage and decomposed sludge used on the land do not propagate helminths.—M.G.G.

Enigk, K. & Eckert, J. (1960). Die Desinfektion von Tierausläufen. **[Disinfection of animal excreta.]**—Zbl. Bakt. I. (Orig.) **179,** 397-432. [Summaries in English, French, Spanish and Russian.] **162**

Excreted helminth eggs may be carried 2–4 cm. deep into soil by rain, though the majority remain in faecal particles on the surface: digging and burrowing by animals may bury them deeper. Sodium pentachlorphenate (30 g./sq. metre in 3 litres of water) destroyed eggs down to 1 cm. depth. Better results were achieved by gases applied under a canvas cover with soil temperature above +10°C.; of 9 gases tested the most effective was 1 , 2-dibromethane, 100 and 200 ml./sq. m. destroying ascaris eggs down to 20 cm. at a soil temp. of +20°C.; 50 ml./sq. m. destroyed 90–100% of the eggs down to 10 cm. Flaming the soil only destroyed eggs directly hit but steaming by a jet under a cover shield for 19 min. killed 95–100% eggs down to 8 cm. in firm, sandy soil.—E.V.L.

Fitzsimmons, W. M. (1960). **Observations on the incidence, pathology and aetiology of Spirocerca lupi infestation in Nyasaland.**—Brit. vet. J. **116,** 272-275. **163**

P.M. examination of 120 village dogs in the Southern Province revealed that all were infested with *S. lupi.* Four of 54 dogs owned by Europeans were infested. Three fatal cases were described. F. discussed sources of infestation.—R.M.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Cheli, R. (1960). Contributo alla conoscenza dei tumori del sistema reticolo istiocitario negli animali domestici. **[Neoplasms of the reticulo-endothelial system in domestic animals.]**—Nuova Vet. **36,** 94-102. [Summaries in English, German and Spanish.] **164**

An account is given of reticulo-endotheliomas, simple and mixed, with and without metastases in 11 dogs and a cow. The primary sites were: skin, muscle, peritoneum, retroperitoneum, mammary gland and bone.
—T.E.G.R.

Dahme, E. & Schiefer, B. (1960). Intracranielle Geschwülste bei Tieren. **[Intracranial tumours in animals.]**—Zbl. VetMed. **7,** 341-363. [Summaries in English, French and Spanish.] **165**

At the institute for animal pathology in Munich, 2,258 dogs were examined P.M. during the 3 years 1957–59. Among these 22 (0·97%) had primary brain tumours. The tumours were classified and described and there are 38 illustrations. Commonest were oligodendroglioma (6 cases) and meningioma (5). In addition, a reticulo-endothelial sarcoma was found in a cat and a pituitary adenoma was found in a cow.—R.M.

Sullivan, D. J. (1960). **Cartilagenous tumors (chondroma and chondrosarcoma) in animals.**—Amer. J. vet. Res. **21,** 531-535. **166**

The records of 40 cases of cartilaginous tumours in food-producing animals are reviewed. Thirty-two of the tumours occurred in sheep, most of which were adult or aged ewes although there were 6 in sheep of one year old or less. Six were in cattle and 2 in horses. The ribs were the most frequent primary site in all three species followed by the sternum and appendicular skeleton. As judged histologically by the standard of Lichtenstein and Jaffe, 20 of the 22 cases in which sections were available were malignant, but as judged by gross criteria of metastases, principally to the lungs, and obvious invasiveness, only 10 were malignant. Although uncommon, the chrondrosarcoma in sheep appears to be the most common cartilaginous tumour in food-producing animals.
—A. Ackroyd.

Panebianco, F. (1960). Contributo allo studio comparato dei tumori del testicolo. **[Comparative study of neoplasms of the testicle.]**—Acta med. vet., Napoli **6,** 213-246. [Summaries in English and Spanish.] **167**

Relevant literature is reviewed and the gross and histological aspects of neoplasms of the testicle are described. A study was made of 27 tumours: 16 seminomas (7 in dogs, 4 in mules, 1 in a horse and 4 in man); 8 Sertoli-cell tumours (5 in dogs and 3 in man); 2 embryomas in man; 1 interstitial-cell tumour in a donkey.—T.E.G.R.

Spaar, F. W. & Wille, H. (1959). Zur vergleichenden Pathologie der Hypophysenadenome der Tiere. [**Comparative pathology of pituitary adenoma in animals.**] — Zbl. VetMed. **6,** 925-944. [Summaries in English, French and Spanish.] **168**

Two cases in dogs are described, one with basophile adenoma of the pituitary and the second with a suprasellar chromophobe adenoma. Recent studies have shown the relative frequency of pituitary adenomas in dogs to be almost the same as in man, and as they produce analogous symptoms they could be useful for comparative studies of pathology and physiology.—E.V.L.

Tarocco, C. (1960). Adenoma cromofobo dell'ipofisi in cagna con diabete insipido ed apparente distrofia adiposo-genitale. [**Chromophobe pituitary adenoma, diabetes insipidus and dystrophia adiposogenitalis in a bitch.**] — Nuova Vet. **36,** 102-107. [Summaries in French, German and Spanish.] **169**

The bitch was ten years old. Diagnosis of the neoplasm was confirmed by P.M. and histological examination. Inability to carry out a complete P.M. examination precluded confirmation of the associated conditions.
—T.E.G.R.

Bellani, L. (1960). Di un caso di linfoadenosi a decorso acuto nel vitello. [**Acute lymphadenosis in a calf.**]—Vet. ital. **11,** 354-373. [Summaries in English, French and German.] **170**

A calf aged 3½ months with a previous history of recurrent digestive disorders had enlarged lymph nodes and cardiac and respiratory disturbances. P.M. findings were enlargement of the liver, gall bladder, spleen, kidneys and lymph nodes, and bright red bone marrow which in some areas was whitish and gelatinous. Transmission to 3 g.pigs, 2 fowls and a rabbit was not achieved. It was believed to be a sporadic case of leucosis.—T.E.G.R.

Sova, Z. & Komárek, J. (1960). Nové poznatky k leukemiím u psů — retikulární hemoblastom. II. Sdělení. [**Leucosis in dogs. Reticular haemoblastoma. II.**]—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. **5,** 317-322. [In Czech. Summaries in English and Russian.] **171**

Leucosis was diagnosed in 9 of about 3,000 dogs examined at a veterinary hospital during 1952–59. Five cases, characterized by lymph node hyperplasia and neutrophilia in the peripheral blood were described. A marked increase of reticular cells in lymph nodes, spleen and bone marrow was demonstrated in smears taken from these organs. The condition was diagnosed as reticular haemoblastoma.—E.G.

Papparella, V. (1960). Osservazioni su di un singolare postumo nella cavia dell'infezione sperimentale leucemica bovina. [**Alopecia in guinea-pigs experimentally infected with the virus of bovine leucosis.**]—Acta med. vet., Napoli **6,** 147-153. [Summaries in English, French, German and Spanish.] **172**

P. has previously described the immediate effect of the virus on guinea-pigs [*V.B.* **30,** 781]. Of 19 which had survived inoculation for 2 months, 5 developed progressive and extensive alopecia with loss of condition and died. Histological examination of skin revealed hyperkeratosis associated with isolated inflammatory foci.—T.E.G.R.

Gylstorff, I. (1960). Erfahrungen mit dem freiwilligen Leukose- und Lähme-Bekämpfungsverfahren in Bayern. [**The campaign for control of fowl paralysis and leucosis in Bavaria.**]—Zbl. VetMed. **7,** 210-214. **173**

A voluntary campaign started in 1957 embraces 23 poultry farms containing 58 lines of fowls. Dead birds are examined histologically in order that the degree of infection of a flock may be determined, also the resistance of different strains and families. Six farms appeared to be free from both diseases. Eight cases of familial resistance or susceptibility were demonstrated, 5 to paralysis, 2 to lymphatic leucosis and one to erythroleucosis.—M.G.G.

NUTRITIONAL AND METABOLIC DISORDERS

Labouche, C., Amalou, P. & Sauvestre, M. (1960). Étude des variations saisonnières de l'urémie de vaches de races tropicales, soumises à une alimentation naturelle. **[Seasonal variations in uraemia in cows of tropical breeds on a natural diet.]** — C.R. Acad. Sci., Paris **251**, 1148-1149. **174**

The seasonal variations in blood urea were attributed to changes in the ratio of nitrogen to cellulose in the fodder. Twenty N'Dama and 6 Moorish zebu cows were studied over a year.—R.M.

Varnell, T. R., Erwin, E. S., Smith, V. R. & Fleming, J. (1960). **Changes in serum, glyco-, and lipoproteins in normal and colostrum-deprived calves.**—J. Dairy Sci. **43**, 1006-1010. **175**

Two female calves (C) were left with their dams for the first 3 days after birth, 2 male calves (O) were removed immediately at birth and fed mature milk. Blood samples withdrawn at regular intervals were fractionated electrophoretically. The changes observed reflected the development of the calves. The serum albumin fraction of the C calves was lower one day after birth than in the O group, but subsequently increased steadily. The α fraction was also lower but increased for the first 3 days and remained constant, whereas in the O group the α fraction increased initially then decreased until after the 6th week of age when it remained constant. The β fraction followed a similar pattern in both groups. 4 different glyco-protein fractions were observed; the total amount in the C calves remained below that of the O calves throughout the study period. 3 lipo-protein fractions were separated; the total increased sharply in the C group to 21 days, decreased to 42 days and increased thereafter, whereas in the O group the fractions increased to 21 days and then decreased steadily.—Joyce E. Hammant.

Modebe, A. N. A. (1960). **The effect of dietary antibiotic on intestinal clostridia and growth rate of chicks.** — J. Dep. Agric. Republ. Ireland **66**, pp. 98-108. **176**

Although chicks fed penicillin at 100 g. per ton of food for 4 weeks tended to have fewer clostridia in the gut than chicks not given penicillin, they did not gain more weight. It was suggested that agents responsible for depressed growth in chicks may vary according to environment.—M.G.G.

Baum, G. J. & Meyer, R. K. (1960). **Effect of adrenal steroids and diethylstilbestrol on growth and fat content of cockerels.**—Amer. J. Physiol. **198**, 1263-1266. [Authors' abst. modified.] **177**

Graded doses of hydrocortisone, cortisone, corticosterone and diethylstilboestrol were administered to 2-week-old cockerels for 7 days. Hydrocortisone and corticosterone inhibited growth, increased carcass fat and lipids in blood and liver; hydrocortisone was the more potent. Cortisone had no effect on growth or fat content at the doses used. Stilboestrol increased blood and liver lipids and stimulated fat deposition without inhibiting growth.

Skovgaard, N. (1960). Gult fedt hos slagterisvin. **[Yellow fat in bacon pigs.]**—Nord. VetMed. **12**, 405-416. [In Danish. Summaries in English and German.] **178**

Yellow fat was examined by spectrophotometry, by the thiobarbituric acid reaction, and histologically. Yellowness was due to deposition of polymers of peroxidized fatty acids and it originated from feeds containing large amounts of unsaturated fatty acids and low amounts of vitamin E. There was no evidence of hereditary factors.—R.M.

Montgomery, R. D. (1960). **Magnesium metabolism in infantile protein malnutrition.** — Lancet, July 9th, 74-75. **179**

There was evidence of Mg depletion in 27 Jamaican infants with kwashiorkor or related syndromes.—R.M.

Bronner, F. (1960). **Transfer of maternal calcium to the offspring via the milk.**—Science **132**, 472-473. [Author's summary modified.] **180**

By measuring the specific activities of milk and of maternal and filial long bones 3 months after calcium-45 had been given to the then non-pregnant rats, it was found that the contribution of the maternal calcium stores to milk formation is similar in magnitude to the contribution to the bone Ca of the offspring, *i.e.*, 10 to 15% of either milk Ca or filial Ca is maternal in origin.

Straub, O. C. & Hughes, J. P. (1960). **Use of dihydrotachysterol in the prophylaxis and treatment of hypocalcemia in dairy cows.**—J. Amer. vet. med. Ass. **137**, 300-303. [Authors' summary modified.] **181**

Relapses occurred in 11 of 60 cows with

parturient paresis that were given calcium gluconate i/v and in 7 of 40 cows given dihydrotachysterol i/m in addition to calcium gluconate. Dihydrotachysterol alone did not prevent parturient paresis in 8 of 13 cows with a history of hypocalcaemia, and given with vitamin D had no prophylactic effect in 5 other susceptible cows.

I. Yonemura, T., Shimbayashi, K., Iizuka, M. & Shiga, K. (1960). **[Studies on osteomalacia in domestic animals. II. Nitrogen metabolism during imbalance of calcium and phosphorus.]**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 115-129. 182

II. Shimbayashi, K., Itabisashi, T. & Yonemura, T. (1960). **[Studies on osteomalacia in domestic animals. III. Nitrogen metabolism during imbalance of calcium and phosphorus.]** — Ibid. pp. 131-141. [In Japanese. Summaries in English.] 183

I. Increase in thickness of the lower jawbones developed in 3 of 5 goats fed for 3 months a ration consisting largely of wheat bran and barley, with a high P content and a low Ca content. Changes in nitrogen metabolism were a greater excretion of N in the urine than in the faeces, and a decrease in the protein nitrogen content of the serum and in the free amino-acid content of the serum and urine.

II. The urinary excretion of urea, in relation to the intake of nitrogen, was higher in 4 goats fed the experimental ration than in 3 goats fed a normal ration. Other differences were a higher ratio of albumin to globulin in the serum, and abnormal results in liver function tests. Liver tissue from a goat with severe acidosis had a high consumption of oxygen with succinate as the substrate. —M.G.G.

Care, A. D. (1960). **The kinetics of magnesium distribution within the sheep.**—Res. vet. Sci. 1, 338-349. [Author's summary modified.] 184

Carrier-free Mg^{28} was injected i/v into sheep and the corrected plasma specific activity/time curves obtained. Each could be subdivided into 3 components by the use of a graphical logarithmic analysis. From them, the magnesium turnover time was calculated and estimates made of the total labile and total exchangeable body Mg.

Using the isotope dilution method, the endogeous faecal excretion of Mg. was calculated and the true daily Mg excretion obtained.

From the corrected plasma Mg^{28} decay curve an estimate of the total true daily excretion of Mg was derived. This was in good agreement with that observed.

With the aid of these excretion data calculations were made of the time intervals likely to elapse before clinical hypomagnesaemia became manifest under varying conditions of magnesium absorption and endogenous faecal Mg excretion. It is suggested that clinical hypomagnesaemia may result from a combination of reduced magnesium absorption and increased excretion of endogenous faecal magnesium.

Selye, H. & Bajusz, E. (1960). **The prevention of experimental myopathies by various chlorides.** — J. Nutr. 72, 37-45. [Authors' summary modified.] 185

Rats fed a diet deficient in K or Mg for a short period became very sensitive to the myotoxic effect of $NaClO_4$: the perchlorate elicited particularly severe motor disturbances and marked degenerative changes in the skeletal muscles. These manifestations were inhibited by the concurrent administration of various chlorides alone or in combination. In this respect, KCl and $MgCl_2$ were equally effective in both K and Mg deficiency.

Another type of neuromuscular disorder was elicited in rabbits with methylchlorocortisol plus dihydrotachysterol. When NaH_2PO_4 was given in addition to these steroids, the motor disturbance was greatly aggravated and a generalized muscular weakness developed that rapidly progressed to total paralysis and death. These acute paralytic seizures could also be prevented by the oral administration of KCl or $MgCl_2$.

Stout, F. M., Oldfield, J. E. & Adair, J. (1960). **Aberrant iron metabolism and the "cotton-fur" abnormality in mink.**—J. Nutr. 72, 46-52. [Authors' summary modified.] 186

Comparison of blood values for "cotton fur" (CF) and normal mink revealed that CF mink had a microcytic, hypochromic anaemia.

Supplementing a fish ration known to produce CF with 11 parenterally-administered B vitamins, parenteral copper, or oral lysine plus tyrosine, did not prevent the condition, but parenteral iron did prevent it.

Iron glycinate added to the ration was incapable of restoring normal haemoglobin values to anaemic, CF mink.

The effect of iron on pigmentation is

thought to be indirect, reflecting low priority of fur pigment formation in the face of nutritional stress.

Cunningham, I. J. (1960). **Molybdate top-dressing and animal health.**—N.Z. J. Agric. **100**, 419; 421 & 423-428. **187**

Molybdenum is an essential food for plants and applied to deficient soils it can be of great benefit but used indiscriminately it can be dangerous to animals. Signs of toxicity are persistent scouring and impaired growth, and brittle bones in young animals. Copper acts antagonistically to molybdenum and when the Cu content of the food is low excess of Mo is most dangerous. A list of areas in New Zealand and maps are given to show where molybdenum top-dressing can be dangerous. This is where the Mo content of the soil is high, where the Cu content is low and where there is an abnormally high response in molybdenum content of pasture herbage.

—E. J. Castle.

Rahman, M. M., Deyoe, C. W., Davies, R. E. & Couch, J. R. (1960). **Selenium and exudative diathesis in chicks and poults.** — J. Nutr. **72**, 71-76. **188**

Supplements of varying levels of sodium selenate, dried brewers' yeast and ashed brewers' yeast were compared with vitamin E in their ability to prevent the symptoms of exudative diathesis in chicks and poults fed a Torula yeast diet. Analyses of blood were made to provide additional information on the relationship of such supplements to the condition of exudative diathesis.

Sharman, G. A. M. (1960). **Selenium in animal health.** — Proc. Nutr. Soc. **19**, 169-176. [Author's conclusions modified.] **189**

Selenium has long been known to be toxic. Since the discovery in 1959 that it is the active principle in Factor 3, it has been recognized as an essential trace element. Areas of soil and plant deficiency exist: animals in such areas may be adversely affected.

The margin between the toxic level and the dietary level required to prevent deficiency signs in animals is small. Se must not, therefore, be added to mineral mixtures or feedingstuffs for farm animals.

There is an urgent need for more toxicity tests on farm livestock. In the meantime, administration of Se to individual animals is the only safe method of correcting deficiency. In this respect the different retentions by animals of organic and inorganic Se may be of practical importance.

The ability of certain plants to concentrate Se is a barrier against top-dressing of the soil with the element, until the behaviour of local flora with regard to Se has been ascertained.

To avoid the expense involved in the use of radioactivation analytical methods, biological tests with farm livestock can be of great assistance in demonstrating areas of Se deficiency.

Reinius, L. & Mäkinen, V. (1960). **Plasma tocopherol in relation to muscular dystrophy of cattle in Finland.** — Nord. VetMed. **12**, 563-572. [In English. Authors' summary modified.] **190**

The plasma of 13 cattle with muscular dystrophy contained, on the average, less tocopherol than the plasma of 100 healthy cattle. Significant differences were found between affected and healthy animals under 6 months of age in the enzootic area and between diseased animals under one year of age and corresponding healthy controls in an area free from the disease. In the enzootic area the plasma tocopherol level of healthy animals in herds with a history of muscular distrophy did not differ significantly from that of animals in unaffected herds, except for cows which had calved between February and May. The tocopherol content of the plasma increased with age. It also rose sharply at the beginning of the pasture period in June to reach a peak in September. It then declined to a minimum in April–May.

Lannek, N., Lindberg, P., Nilsson, G., Nordström, G., Orstadius, K. & Åberg, B. (1960). **Production of muscular dystrophy in pigs by feeding certain grains.**—Zbl. VetMed. **7**, 403-410. [In English. Summaries in French, German and Spanish.] **191**

In Sweden muscular dystrophy appears to occur more often after a wet harvest season. Samples of grain from an affected farm were analysed and were fed for 2 months to 14 pigs each weighing initially 20–25 kg., and also to rats and mice for up to 5 months. Muscle biopsy after 55 days revealed dystrophy in all the pigs, though none was present in another 6 pigs fed a different grain. Two pigs which received 50 mg. alpha-tocopheryl acetate per kg. of food and two given 0·2 mg. sodium selenate per kg. did not develop muscle lesions, neither did they have the rises in serum

glutamic-oxaloacetic acid transaminase or serum glutamic-pyruvic transaminase that affected pigs had.—R.M.

Kokatnur, M. G., Okui, S., Kummerow, F. A. & Scott, H. M. (1960). **Effect of long chain keto acids on encephalomalacia in chicks.**—Proc. Soc. exp. Biol., N.Y. **104,** 170-171. **192**

The development of encephalomalacia in week-old chicks fed a vitamin E deficient diet containing maize oil was accelerated by the addition of 0·25% of oxidation products of long chain unsaturated fatty acids. The most active of the 3 oxidation products tested was 12-oxo-cis-9-octadecenoic acid. In a further experiment lower levels of maize oil and acid were fed but were not so effective in producing encephalomalacia.—E. J. CASTLE.

Woods, W. D., Hawkins, W. B. & Whipple, G. H. (1960). **Vitamin $B_{12}Co^{60}$ readily passes the placenta into fetal organs and nursing provides B_{12} from mother to pup. A record of its distribution.** — J. exp. Med. **112,** 431-444. [Authors' summary modified.] **193**

During lactation and suckling a liberal amount of labelled vitamin is drawn from the mother's body stores and contributed to the body of the pups where it is absorbed and distributed in the various organs, in much the same manner as in adult dogs injected with labelled vitamin. A redistribution is noted as the months pass; but the high values in heart, liver, and gastric mucosa persist, and the brain usually shows a slow increase.

Setchell, B. P., Dickinson, D. A., Lascelles, A. K. & Bonner, R. B. (1960). **Neonatal mortality in lambs associated with goitre.**—Aust. vet. J. **36,** 159-164. Discussion: pp. 306-307. **194**

This paper records the incidence of goitre in lambs on three properties in New South Wales where goitre in man also occurs. On two of the properties the losses were 325 of 1,050 lambs and 250 of 1,460 lambs respectively. Known goitrogenic plants were not found in the pastures. The data collected were body weight, thyroid weight, thyroid iodine concentration, total thyroid iodine and bone development. In many of the dead lambs with enlarged thyroids, decrease in iodine concentration and retarded osseous maturity were found. Histologically the thyroids showed colloid goitre. Some increase in thyroid size was found in apparently normal lambs.

Present recommendations for treatment are either 300 mg. potassium iodate orally per month or intramuscular injections of 1 ml. of iodized oil.—W. L. HINDMARSH.

Goolden, A. W. G. (1960). **Use of radioactive iodine in the diagnosis of thyroid disorders.** —Brit. med. Bull. **16,** 105-112. **195**

Various tests are described in which radioactive iodine is used in the investigation of thyroid function and the difficulties encountered in the interpretation of results discussed. These tests either involve the measurement of uptake of ^{131}I by the thyroid or the measurement of the radioactivity of the urine. Iodine may also be measured as protein-bound iodine in the plasma, this is usually in the form of thyroxine. A brief description is given of the use of ^{132}I which has a very short half life.

Such hormones as the thyrotropic or the thyroid or antithyroid drugs may be used in conjunction with ^{131}I to aid diagnosis. Various factors influencing iodine metabolism are discussed.—E. J. CASTLE.

McGirr, E. M. (1960). **Sporadic goitrous cretinism.**—Brit. med. Bull. **16,** 113-117. **196**

In sporadic goitrous cretinism, believed to be a hereditary developmental abnormality, four distinct biochemical abnormalities occur: (1) Failure to produce organic iodine compounds despite a facility to trap inorganic iodine; (2) Failure to conserve iodine of the iodotyrosines because of lack of the enzyme dehalogenase; (3) Failure to couple iodotyrosines to produce iodothyronines; (4) Production and secretion of abnormal iodinated thyroid protein or polypeptide.—E. J. CASTLE.

Hibbs, J. W. & Conrad, H. R. (1960). **Studies of milk fever in dairy cows. VI. Effect of three prepartal dosage levels of vitamin D on milk fever incidence.**—J. Dairy Sci. **43,** 1124-1129. **197**

In a study involving 164 parturitions in Jersey cows with previous milk fever histories, vitamin D dose rates of 15, 20 or 30 million units/day divided in 2 feeds were fed beginning 5 days before expected calving date and in one feed after parturition; 113 calved within this schedule. Based on a 64% milk fever expectancy in these cows, the average protection was 67%, 82% and 79% for the 3 dose rates respectively.—E.V.L.

Pearce, P. J. (1960). **Some biochemical aspects of ketosis with particular reference to cattle.** —Vet. Rev. Annot. **6,** 53-93. **198**

A detailed review of the literature with an extensive bibliography.—R.M.

Nemets, M. G. (1960). **[Genesis of physiological immaturity in relation to ketonuria in the cow during pregnancy.]** — Bull. Biol. Med. exp. URSS **50**, No. 8 pp. 75-80. [In Russian. Summary in English.] **199**

Ketone bodies were present in the urine of 31 of 60 cows slaughtered during or soon after apparently normal pregnancy. When ketone bodies were present in the cow, they were also present in the blood of the foetus or calf. Ketonuria in the cow was associated with involution of the corpus luteum and incomplete placentation; the calves were immature when born, compared with the calves of cows not having ketonuria.—R.M.

Shakhova, T. V. (1960). **[Urine composition in healthy high-yielding cows and cows with alimentary toxaemia.]** — Veterinariya, Moscow No. 7 pp. 61-65. [In Russian.] **200**

In 2 herds of high-yielding dairy cattle, the urine of cows with alimentary toxaemia contained proteins and ketone bodies, and had a lower specific weight and a lower hippuric acid content than the urine of healthy cows. The pyruvic acid content was lowest in the dry period and highest in the first part of lactation in both healthy and toxaemic cows, but tended to be higher in toxaemic cows. —M.G.G.

Hird, F. J. R. & Symons, R. H. (1960). **The mechanism of ketone-body formation.**—Biochem. J. **76**, No. 2 pp. 25P-26P of Proceedings. **201**

From studies on the fate of acetate and butyrate labelled with radiocarbon in omasum and liver tissues from sheep, the authors concluded that acetoacetyl-coenzyme A was converted into acetoacetate by means of prior conversion into hydroxymethylglutaryl-coenzyme A.—R.M.

See also abst. **89** (relationship between vitamin A and avian coccidiosis).

DISEASES, GENERAL

Anon. (1960). **United Nations. Report of the IVth joint FAO/OIE Far East meeting of animal health held at Manila, Philippines 7-12 December, 1959.** pp. 67. Rome: Food and Agriculture Organization of the United Nations. **202**

Representatives from 17 countries discussed the current situation with regard to rinderpest, foot and mouth disease, rabies, diseases of young animals, and poultry diseases. J. R. Hudson commented on the rinderpest eradication scheme in South-East Asia and R. N. Wardle discussed regional protection against introduction of infectious diseases.—R.M.

van Bemmel, A. C. V., Peters, J. C. & Zwart, P. (1960). **Report on births and deaths occurring in the gardens of the Royal Rotterdam Zoo during the year 1958.**—Tijdschr. Diergeneesk. **85**, 1203-1213. [In English. Summaries in French, German and Dutch.] **203**

Interesting cases included tuberculous arthritis in a sacred ibis (*Threskiornis aethiopica*); lung infection with *Penicillium lilacinum* in the reptile *Testudo denticulata;* repair of the broken lower bill of a ground hornbill by means of a plastic prosthesis. During the year P.M. examinations were made on 60 mammals and 298 birds.—R.M.

Hayashi, M. (1960). **[Lactosuria in milch cows.]**—Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 143-154. [In Japanese. Summary in English.] **204**

Sugar was demonstrated in the urine of 42% of 422 cows in 4 districts, with a range between districts of 8·8 to 58·7%. The amount of sugar excreted in the urine by 39 healthy cows in 24 hours was 31–79 g., about 10% of that in the daily milk yield. Cows excreting sugar in the urine had 7 mg.% less sugar in the blood and 500 mg.% more protein in the serum than normal cows. No differences were found in calcium and inorganic phosphorus content of the serum nor in acetone content of blood, urine and milk. Lactose was detected in urine containing sugar, and lactosazone in urine with a high sugar content. Seven cows given glucose i/v excreted 1·8–17·2% of the dose in 18–45 min. while 3 cows given lactose i/v excreted 67·2–79·2% in 12–15 hours. Milking decreased the sugar content of the urine, increased that of the mammary vein blood and did not affect that of the jugular vein blood. Stopping milking for a day increased the sugar content of blood and urine and the non-protein nitrogen content of the serum but reduced serum protein, inorganic phosphorus and especially calcium.—M.G.G.

Meijer, W. C. P. (1960). **Vitiligo.**—Tijdschr. Diergeneesk. **85,** 592-609. [In Dutch. Summaries in English, French and German.] 205

Flecks of depigmented skin and the overlying hair, similar to vitiligo in man, occurred on indigenous cattle and a buffalo on Bali Island in Indonesia. M. described ten cases and there are photographs of four. Preliminary observations on this condition were published in 1939 [*Ned. ind. Bl. Diergeneesk,* **51,** 237]. M. suggested that hereditary factors should be studied.—R.M.

Lawrie, R. A. (1960). **Post mortem glycolysis in normal and exudative longissimus dorsi muscles of the pig in relation to so-called white muscle disease.**—J. comp. Path. **70,** 273-295. 206

The biochemical changes in normal pig longissimus dorsi during post-mortem glycolysis were studied at 37°C. in moist nitrogen and compared with those in the horse and the ox. Pig muscle has a considerably lower glycogen store than these species. The mean initial (1 hour post-mortem) and ultimate (24 hours) pH values were 6·7 and 5·5 respectively. The onset of the fast phase of rigor mortis occurred 50 min. after the initial time. The initial creatine phosphate phosphorus was considerably lower and the adenosine triphosphate phosphorus considerably higher than in the other species. The degree of exudation during P.M. glycolysis was variable but not so marked as in pigs with white muscle disease. In this case there was apparently a high rate of P.M. glycolysis and the ultimate pH was lower. The histological appearance of white muscle is described and 4 photomicrographs included.

—E. J. Castle.

Camain, R., Brès, P. & Plagnol, H. (1960). Aspects histo-pathologiques des membranes chorio-allantoïdiennes soumises à des agressions expérimentales non virales. **[Histology of lesions of the chorio-allantoic membrane of chick embryos caused by agents other than viruses.]** — Ann. Inst. Pasteur **98,** 846-860. [Summary in English.] 207

This is a warning against attributing to the action of viruses certain changes in the chorio-allantoic membrane. Trauma could cause various reactions ranging from moderate hyperplasia of the ectoblast to hyperplasia affecting all three layers, accompanied by necrosis, oedema, haemorrhages and polymorph infiltration.—R.M.

Di Martino, M., Mastronardi, M. & Piergrossi, A. (1960). Mediastino e sindromi mediastiniche nel cane: aspetti patogenetici, clinici e diagnostici. (Contributo clinico-sperimentale). **[The mediastinum and mediastinal syndromes in the dog. IV. Radiography.]**—Acta med. vet., Napoli **6,** 89-138. [Summaries in English and French.] 208

A detailed description of the technique for X-ray examination of the mediastinum in the dog in sagittal and in lateral projections.

—T.E.G.R.

Wamberg, K. (1960). **Is gonadal shielding of any practical value in veterinary radiology?** —Nord. VetMed. **12,** 431-443. [In English. Summaries in German and Danish.] 209

W. placed a small lead shield over the scrotum of dogs submitted to X-ray of the hindquarters, as a precaution against possible radiation damage to the testicles.—R.M.

Garner, R. J., Jones, H. G. & Sansom, B. F. (1960). **Fission products and the dairy cow. II. Some aspects of the metabolism of the alkaline-earth elements of calcium, strontium and barium.** — Biochem. J. **76,** 572-579. [Authors' summary modified.] 210

The isotopes ^{45}Ca and ^{89}Sr, ^{89}Sr and ^{140}Ba, or ^{45}Ca and ^{140}Ba were administered simultaneously, orally or intravenously, to three pairs of lactating cows.

The mean recoveries of Ca, Sr and Ba in the 8 days after oral administration were (respectively): from faeces, 71, 89 and 98%; from urine, 0·4, 1·3 and 1·1%; from milk, 16, 1·9 and 0·6% of the dose.

In the 8 days after intravenous administration corresponding figures were: from faeces, 16, 18 and 36%; from urine, 1·2, 21 and 34%; from milk, 32, 16 and 10% of the dose.

Absorptive discrimination made the most important contribution to overall discrimination between Ca, Sr and Ba during their passage from diet to milk. Mammary secretion also played a considerable part with Sr; but, with Ba, the effects of renal excretion, endogenous secretion into the gut and mammary secretion were approximately equal. The rate of removal of Ca and Sr from plasma by exchange reactions was approximately the same; the rate of removal of Ba by this process was 80% of that of Ca. The rates of incorporation of Sr and Ba into the non-exchangeable fraction of the whole skeleton were 91 and 61% respectively of that of Ca.

Newton, W. T. & Ter-Pogossian, M. (1960). **Median lethal dose for guinea pigs of cobalt-60 gamma irradiation.** — Radiation Res. **13,** 298-304. [Authors' summary modified.] **211**

The dose that caused death within 30 days was 326 rads.

Change in weight of the irradiated animals was recorded for a period of 30 days. Extravasation of blood into viscera and serous cavities was the most frequent P.M. finding.

Buonaccorsi, A. (1960). Cuore polmonare ed enfisema polmonare cronico nel cane. **[Cor pulmonale and chronic pulmonary emphysema in the dog.]**—Veterinaria, Milano **9,** 206-214. [Summaries in English, French, German, Spanish and Portuguese.] **212**

Electrocardiographic changes and clinical symptoms similar to those of cor pulmonale in man were observed in 13 of 50 dogs with chronic pulmonary emphysema.—T.E.G.R.

Hultgren, H. & Spickard, W. (1960). **Medical experiences in Peru.**—Stanf. med. Bull. **18,** 76-95. **213**

The last three pages of this article refer to circulatory disorders that may be due to high altitude in horses, cattle, new-born pigs and lambs. Hydropericardium was found in 389 lambs that died in 1958 (out of 50,000 born) : the cause was unknown.—R.M.

Jelínek, V. & Černá, J. (1960). Nález ložiskových subseróznich atypických reakcí lymfatické tkáně (nodulárni lymfadenopatie) v játrech a plicích u koní a jejich diagnostický význam. **[Nodular lymphadenopathy in liver and lung in horses, and its diagnostic significance.]**—Sborn. čes. Akad. zemědělsk. Věd, vet. Med. **5,** 339-352. [In Czech. Summaries in English and Russian.] **214**

Of 500 horses examined at an abattoir, 104 had focal subserous lesions in lymphatic tissues of liver and lungs, 76 of these were of parasitic origin. In 11 there was focal subserous non-specific granuloma in liver and lung, in 8 focal swelling of serous membranes and in one subserous focal pulmonary adenoma. True nodular lymphadenopathy was present in eight horses. This condition was stated to be far more frequent in pigs, cattle and sheep than in horses.—E.G.

Del Bono, G., Emdin, R. & Pierotti, P. (1959). Contributo alla conoscenza delle cisti pancreatiche dell'agnello. **[Pancreatic cysts in lambs.]**—Ann. Fac. Med. vet. Pisa **12,** 97-112. [Summaries in English and French.] **215**

Cysts, varying in size from a millet seed to a pea, were observed in the pancreas of 76 of 2,532 slaughtered lambs; their aetiology and pathogenesis are obscure.—T.E.G.R.

Trautwein, G. (1960). Untersuchungen über ein Lipopigment in der Leber des Schafes. **[Lipoid pigment in liver of sheep.]**—Arch. exp. VetMed. **14,** 1-16. **216**

A yellow-brown, sudanophile, acid-fast and fluorescing pigment, apparently ceroid, occurred in mesenchymal cells at the site of chronic inflammation or fluke tracks. It was not seen in liver from 30 healthy sheep [6 photomicrographs].—R.M.

Zeller, R. (1960). Elektrokardiographische Untersuchungen bei dämpfigen Pferden. **[Electrocardiography in the differential diagnosis of dyspnoea in horses.]**—Zbl. VetMed. **7,** 169-172. **217**

Z. discussed his experiences of distinguishing between respiratory disorders and heart disease as causes of dyspnoea. —R.M.

Schulz, J. A., Rossow, N. & Urbaneck, D. (1960). Ein Beitrag zur Diagnose der Lebererkrankungen des Rindes durch Clearance-Untersuchungen mit Bromsulphalein und gleichzeitig vorgenommene Leberbiopsie. **[Diagnosis of liver diseases in cattle by bromsulphalein clearance and liver biopsy.]**—Mh. VetMed. **15,** 257-267. **218**

Results are given of the bromsulphalein clearance test and liver biopsy in 12 healthy cattle and 11 with liver diseases. The two tests in combination are recommended for the practical diagnosis of liver diseases in cattle. —M.G.G.

Hunter, G. & Smith, H. V. (1960). **Calcium and magnesium in human cerebrospinal fluid.** —Nature, Lond. **186,** 161-162. **219**

Improved techniques upheld earlier results. The material was obtained from 38 patients with mild neurological conditions; the concentration of Ca and Mg averaged 4·56 mg.% and 2·71 mg.% respectively compared with 9·41 mg.% and 1·96 mg.% found in the serum. Neither the Ca nor the Mg content varied with changes in serum levels and no gradient was found at different levels of the neural axis. Tuberculous meningitis produced an increase in Ca by 20% and a drop

in Mg concentration by 25%; these effects were less apparent in the cisternal and ventricular fluids.—Joyce E. Hammant.

Vaughan, L. C. (1960). **Osteoarthritis in cattle.** —Vet. Rec. 72, 534-538. 220

The clinico-pathological aspects of osteoarthritis of the stifle or hip joints of 2 bulls and 11 cows of 5 breeds and average age of 8 years (range 2–15 years) are described. A definite history of injury immediately preceding the onset of lameness was obtained in only 2 cases. Gross thickening of the periarticular tissues was found in all the affected stifle joints. P.M. examination of the affected joints showed that all were of pathological grade III or IV (Collins, 1949) even though lameness in half the animals had lasted only 4–5 weeks. Areas of thinning or total loss of cartilage, gross destruction of bone and eburnation and rupture of the cruciate ligaments were constant findings in all grossly affected stifle joints.—A. Ackroyd.

Šabec, D. (1960). Untersuchungen über eine Arthrosis des Sprunggelenkes beim Schwein. **[Arthrosis of the hock joint in pigs.]** — SchrReihe Max Planck Inst. No. 8 pp. 84. [Dissertation, Hanover.] 221

This condition was very common in one particular strain of the German Improved Landschwein breed: lesions were found in 82% of 95 slaughtered pigs, compared with only 24% of another strain of the same breed. It was associated with hind-limb lameness and a stiff gait. The lesion was primary non-infectious chronic osteoarthritis with deformation and ankylopoiesis. Only advanced cases could be detected by X-ray. It was suggested that a particular conformation of the body predisposed pigs towards arthrosis.—R.M.

Ženškov, B. (1960). **A contribution to "Eosinophilic panostitis" in dogs.**—Zbl. VetMed. 7, 671-680. [In English. Summaries in French, German and Spanish. Author's summary modified.] 222

A specific bone disease to which young Alsatian dogs have been subject since the second world war [See *V.B.* **22,** 1100 & 1101] is not caused by either aerobic or anaerobic organisms. Over 70 cases were studied. Basically it is a recurrent transitory osteosclerosis of the long bones which does not involve the epiphysis. The course is benign; it ceases by the 20th month of age, at the latest, after a certain number of relapses.

The constant recurrence of the disease in a proportion of pups in every litter from certain sires and dams and the improvement obtained by exclusion of certain progenitors, suggests a complex aetiology in which heredity plays an important role.

The disease was transmitted to 2 of 5 healthy Alsatian pups by inoculation into the medullary cavity of an unfiltered suspension of bone marrow from a spontaneous case. A Seitz filtrate of similar material produced the disease within 2 weeks of inoculation in 2 of 3 healthy dogs. Three control pups inoculated with bone marrow suspension from a healthy dog developed no signs of disease.

Strasser, H. (1960). Diagnostik und Therapie der Discusprolapse beim Hund. **[Diagnosis and treatment of disk prolapse in the spine of dogs.]**—Kleintier-Praxis 5, 30-34. 223

A new treatment for disk prolapse in dogs was described. Under anaesthesia, the dog is submitted to bending and torsion of the back while hanging horizontally from cords attached to its legs. The cords are then tightened to stretch the back, while a plaster jacket is applied, enclosing the whole of the trunk. The jacket is removed after about 10 days. Of 33 dogs with posterior paralysis treated by this method, 17 were cured and 6 showed improvement.—M.G.G.

Geyer, S. (1960). Konservative Behandlung der Discopathien des Hundes mit der Mikrowelle. **[Micro-wave therapy in diseases of intervertebral disks in dogs.]** — Kleintier-Praxis 5, 27-30. 224

In 2½ years, 81 dogs with diseases of the intervertebral disks were treated with microwaves. Symptoms disappeared in 30 and were alleviated in 22. Treatment consisted of irradiation of the affected part of the vertebral column for 6–10 min. daily. On the average, 10 treatments were necessary. The waves were of 12·4 cm. and were applied from a distance of 15–20 cm. at a strength of 60–100 watts.—M.G.G.

King, A. S. & Smith, R. N. (1960). **Disc protrusion in the cat: ventral protrusions and radial splits.**—Res. vet. Sci. 1, 301-307. [Authors' summary modified.] 225

Ventral protrusions and radial splits of the intervertebral disk were investigated in 100 adult cats, 50 of known age. Forty-eight of the latter were also examined for osteophytes. The ventral protrusions were either diffuse mounds or discrete knobs; clear splits of the annulus usually led towards the protrusion,

but the annulus was seldom completely perforated. They were found in 23 cats. Forty-nine disks were affected, most of them (69%) being between T10 and S1. There were no true lateral protrusions.

Wintzer, H. J. (1960). De behandeling van beenfracturen proximaal van de carpus bij het rund door middel van een gemodificeerde Thomas-spalk. [**A modified Thomas splint for bone fractures situated proximal to the carpal joint in the cow.**] — Tijdschr. Diergeneesk. **85**, 795-807. [In Dutch. Summaries in English, French and German.] 226

W. reported successful repair of fractures of the humerus or radius in eight cattle aged between 10 weeks and 2 years.—R.M.

Hiepe, T. (1960). Die Bedeutung der Liquoruntersuchung für die Neurodiagnostik bei Pferd und Schaf. [**Diagnostic value of examination of cerebrospinal fluid from horses and sheep.**]—Zbl. VetMed. **7**, 152-159. 227

Normal data for protein composition, pressure and cell count were obtained from a thousand samples of c.s.f. Abnormalities in the c.s.f. in Borna disease and other diseases of the brain in horses and sheep were studied. There were specific changes in listeriosis in sheep.—R.M.

Rossow, N. (1960). Zur Prüfung der Nierenfunktion mittels renaler und totaler Clearanceverfahren unter besonderer Berücksichtigung der Totalclearance mit p-Aminohippursäure beim Hund. [**Tests for kidney function, particularly the para-aminohippuric acid method in dogs.**]—Arch. exp. VetMed. **14**, 84-96. 228

Total clearance of the acid in 18 healthy dogs was 248 ± 20 ml. per min.$^{-1}$ per sq.m.$^{-1}$ of body surface. Values below 160 were a sign of kidney disease.—R.M.

POISONS AND POISONING

Anon. (1960). **Medical and biological aspects of fluoridation.**—Lancet, August 20th, 425-428. 229

This review of the literature on the metabolism and toxicity of fluorine contains the statement that "more than 4400 tons of fluorine are discharged annually into the atmosphere of the British Isles during the manufacture of superphosphate fertilisers". —R.M.

Tracy, R. L., Woodcock, J. G. & Chodroff, S. (1960). **Toxicological aspects of 2,2-dichlorovinyl dimethyl phosphate (DDVP) in cows, horses, and white rats.** — J. econ. Ent. **53**, 593-601. [Authors' abst. modified.] 230

Five horses were exposed continuously to the vapours of 0·5 mg. dichlorvos (or DDVP) per cu. ft. in a closed barn for 22 days. Mild cholinesterase (ChE) depression was demonstrable in their r.b.c. after 7 days with return to normal at 11 to 22 days. The plasma was within normal limits of ChE activity throughout the test period. The concentration of DDVP in the air varied between 0·24 and 1·48 mg./litre or 1·4% to 8·4% of the daily dose.

Two cows suckling calves had normal ChE levels in their r.b.c. while ingesting 200 p.p.m. DDVP daily. Severe depression occurred at 500 p.p.m. and a single dose of 27 mg./kg. caused cholinergic collapse with recovery. The ChE levels in the calves remained normal throughout the 78-day test. Female rats suckling litters were repeatedly intoxicated by oral administrations of 30 mg. DDVP/kg. The litters of these rats had normal ChE levels in r.b.c. and plasma, and weight-growth curves were normal. Fresh liver macerates from different animals detoxified DDVP, according to bioassay with *Musca domestica*, at a rate of about 500 mg. DDVP/g. of liver.

These findings clearly demonstrated that DDVP is completely detoxified in the animal body and none accumulates or is stored in animal tissues. The hazard is related directly to the weight of acute intake rather than to repeated exposures or metabolic deviation of the compound.

I. Smirnov, F. E., Grosheva, G. A. & Stolyarova, A. L. (1959). [**Role of the plant Trichodesma incanum in the aetiology of "suilyuk disease" of horses.**]—Sborn. nauch. Trud. Uzbek. Inst. Vet. **13**, 173-185. [In Russian.] 231

II. Smirnov, F. E. & Stolyarova, A. G. (1959). [**Pathogenesis of Trichodesma poisoning ("suilyuk disease") of horses.**]—Ibid. 186-194. [In Russian.] 232

III. Smirnov, F. E., Grosheva, G. A. & Stolyarova, A. G. (1959). [**Effect of leaves and stems of Trichodesma incanum on cattle.**]—Ibid. 195-198. [In Russian.] 233

I. Symptoms and P.M. lesions in 12 horses, the daily ration of which was supple-

mented with the leaves and stalks, or the seeds, or an alcohol extract of the seeds of *T. incanum*, were characteristic of "suilyuk disease". It was concluded that this plant is the cause of "suilyuk disease" of horses.

II. Six foals, divided into 3 groups, and fed 3 g. daily of seeds of *T. incanum* for 20, 36 or 76 days were slaughtered at intervals between 20 and 142 days after feeding commenced. Bronchopneumonia typical of "suilyuk disease" developed in the 2 fed seeds for 76 days. P.M. changes after 20 days were slight proliferative changes in the walls of the alveoli and bronchial epithelium, slight degeneration and atrophy of the liver, kidneys and heart, and mild catarrh in the gastro-intestinal tract. After 36 days the changes in the lungs became more pronounced, with the appearance of foci and catarrhal pneumonia. After 2½ months interstitial pneumonia was seen with pulmonary induration and pronounced proliferation of the bronchial epithelium. The liver and kidneys showed degenerative and proliferative changes. The lesions did not regress after administration of the seeds stopped, but became more characteristic of "suilyuk disease".

III. Six calves, 9–12 months old, were divided into 3 groups and fed 28, 40 or 100 g. of *T. incanum* leaves and stems daily. One fed 100 g. daily died after 6½ months. The remaining 5 were slaughtered after 7½ months without having shown symptoms. Lesions typical of "suilyuk disease" were found in all 6.—M.G.G.

Ionescu, G. & Stancu, D. (1960). Acţiunea leucogena a plantei Helleborus purpurascens. **[Leucoblastosis after subcutaneous inoculation of Helleborus purpurescens extract into horses, cattle, pigs and dogs.]**—Lucr. Stiint. Inst. Agronom. Bucureşti pp. 689-697. [In Roumanian. Summaries in French and Russian.] 234

Aqueous extract was prepared from one part of rhizome in ten of water. S/c inj. of between 0·5 ml. (dogs) and 4 ml. (cattle) increased the number of w.b.c. in peripheral blood. The increase culminated 2–3 days after injection, with a count of from 24,000–36,000 cells per cu. mm. Neutrophiles accounted for most of the increase in cells.—R.M.

Blumenberg, F. W., Enneker, C. & Kessler, F. J. (1960). Zur Frage der hepatotoxischen Wirkung oral verabreichten Tannins und seiner Galloyl-Bausteine. **[Absence of hepatotoxic action of orally administered tannin and its galloyl components.]**—Arzneimittelforsch. **10,** 223-226. [Summary in English.] 235

Blumenberg, F. W. & Kessler, F. J. (1960). Untersuchungen über die Resorbierbarkeit oral zugeführten tannins. **[Absorption of tannins administered orally.]** — Ibid. 742-743. 236

The authors were unable to substantiate claims that tannins given by mouth caused liver damage: rats were given 1 g./kg. body wt. tannic acid daily for 231 days. Paper chromatography of the blood of these rats revealed no trace of gallo-tannin, but gallic acid and its decomposition products were detected.—R.M.

Sazawa, H. (1960). **[A toxic substance from sweet potatoes with black rot due to the fungus, Ceratostomella fimbriata.]** — Bull. Nat. Inst. Anim. Hlth, Tokyo No. 38 pp. 99-106. [In Japanese. Summary in English.] 237

A substance was extracted with alcohol or ether from sweet potatoes that had rotted after experimental infection with *C. fimbriata.* A calf inoculated i/v with 25 ml. developed symptoms, followed by death, similar to those in a calf given by mouth 1 kg. of sweet potatoes with spontaneous black rot. The lethal dose was determined for rabbits, g.pigs and mice.—M.G.G.

Hore, D. E. (1960). **Facial eczema.**—Aust. vet. J. **36,** 172-176. Discussion: p. 311. 238

H. described the distribution, incidence, seasonal, climatic and environmental conditions associated with outbreaks of facial eczema in sheep in Victoria in 1959. High morbidity and mortality rates were reported in some flocks and many properties in the East Gippsland district were affected. The disease was diagnosed also in one cow.

The clinical signs and the lesions are described in some detail.

The fungus, *Sporidesmium bakeri,* which has been established as responsible for facial eczema in New Zealand, was isolated from pastures in the district, and a culture of one isolate produced typical liver damage in a lamb.—C. H. GALLAGHER.

Dodd, D. C. (1960). **Photosensitivity diseases in New Zealand. XXI. The susceptibility of the rabbit to facial eczema.**—N.Z. J. agric. Res. **3,** 491-497. 239

The gross and histological changes which

occur in the liver of rabbits with facial eczema are described. The damage can be caused by "toxic grass", the facial eczema fungus, *Sporidesmium bakeri* or extracts therefrom containing the toxin sporidesmin. The essential feature is an acute cholangitis characterized by periductal oedema, fibrosis and cellular infiltration, the degree of which is proportional to the size of the duct. The extrahepatic biliary system is severely affected. The lesions are similar to those seen in sheep and g.pigs but are more acute.—A. Ackroyd.

See also abst. **143** (toxicity of organic phosphorus insecticides).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Zimmermann, G. (1960). Zusammenhänge zwischen chemotherapeutischer Wirkung und Konstitution der Chemoseren (Sulfonamidazo-Serumproteine). 5. Mitteilung über Azoproteine. **[Relationship between therapeutic action and constitution of combinations of sulphonamide with serum protein. V.]** — Arch. exp. VetMed. **14**, 17-36. **240**

Azo proteins resulting from conjugation of sulphonamide and serum protein were effective against streptococcal septicaemia in mice only if the degree of conjugation was small, as in the case of a mixture of sulphanilamide, sulphamerazine and sulphaguanidine or a mixture of dapsone and sulphaethidole coupled to normal serum. Highly conjugated compounds were broken down very slowly, and were therefore long-acting, but they did not protect against massive infection.—R.M.

Tölgyesi, G. (1960). Veränderungen in der Blutzusammensetzung nach Largactil-Injektion. **[Changes in blood composition of horses after injection of chlorpromazine.]**— Acta vet. Acad. Sci. hung. **10**, 111-117. [In German.] **241**

Injection of 1 mg. chlorpromazine caused dilution of the blood, lasting 6–12 hours, in which the red cell count was decreased by 10–20%. It was therefore indicated in the temporary relief of circulatory disturbances caused by increased peripheral resistance. —R.M.

Bush, L. J., Yang, M. G. & Odell, G. V. (1960). **Effect of chlorpromazine on the performance of lactating dairy cows.**—J. Dairy Sci. **43**, 1118-1123. **242**

No sedation was produced by 5 g. chlorpromazine per day divided equally in the morning and evening feeds, but tranquillization was marked in 2 cows receiving 4·5 and 9·0 g. respectively, in a single dose. The drug was not detected in the milk at any dosage. No differences regarding milk production or body weight changes were observed among groups receiving 0, 250 or 500 mg./day over a 24 week period.—E.V.L.

Borgman, R. F. & Underbjerg, G. K. L. (1960). **The action and use of bulbocapnine in cats and cattle.**—J. Amer. vet. med. Ass. **137**, 293-296. **243**

The dose of bulbocapnine used to produce a state of catalepsy in cats, during which the cat could be easily handled for clipping or other procedures, was 15 mg./kg. body wt. by s/c inj. The drug quietened rough heifers when inj. s/c at 4·5 mg./kg.—R.M.

See also absts. **22** (isoniazid in avian TB.); **31** (oxytetracycline in swine erysipelas); **43** (resistance to streptomycin in chloramphenicol treated E. coli); **80** (effect of chemotherapeutics and antibiotics on bacteria); **86** (trypanocides); **90** (tetracycline in anaplasmosis); **143-147** (insecticides); **149-151 & 154-158** (anthelmintics).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

I. Kibler, H. H. & Yeck, R. G. (1959). **Environmental physiology and shelter engineering with special reference to domestic animals. L. Vaporization rates and heat tolerance in growing Shorthorn, Brahman and Santa Gertrudis calves raised at constant 50° and 80°F temperatures.**—Res. Bull. Mo. agric. Exp. Sta. No. 701 pp. 44. **244**

II. Johnson, H. D. & Ragsdale, A. C. (1959). **Environmental physiology and shelter engineering with special reference to domestic animals. LII. Effects of constant environmental temperatures of 50° and 80°F on the growth responses of Holstein, Brown Swiss, and Jersey calves.**—Ibid. No. 705 pp. 32. **245**

III. Kamal, T. H., Johnson, H. D. & Ragsdale, A. C. (1959). **Environmental physiology and shelter engineering with special reference to domestic animals. LIV. The effect of long exposure of environmental**

temperatures of 50° and 80°F on glutathione, BEI^{131}, and growth rate of dairy calves.—Ibid. No. 710 pp. 18. 246

I. Calves from 1½–3 months old were divided into groups containing representatives of each breed; except for differing temperatures the husbandry of each group was similar. Studies were conducted up to the age of 17 months. For all breeds, respiratory and total vaporization rates increased linearly with age, but at a greater rate at 80°F., the Brahman having the lowest rate of change. Skin vaporization accounted for the greatest increase at 80°F. The Santa Gertrudis calves had similar growth curves in both groups, the Brahmans gained better at 80°F. while the Shorthorns gained less, had higher rectal temperatures and respiratory rates, resulting in higher respiratory vaporization, and were less able to dissipate heat by non-evaporative means and suffered heat stress more, particularly at 90°F. and above.

II. Dairy calves were divided into groups and placed under similar conditions to those in the previous experiment, for the first year of life, and their growth responses were recorded. The Holsteins were less able to maintain a state of homeothermy at 80°F. and weight gain was lower than in those at 50°F.; the Jerseys were also affected but somewhat less. Temperature–age effects on weight gains were marked; the 50°F. Holsteins and Jerseys had higher growth rates up to 8 months whereas the 80°F. animals developed more rapidly towards the ends of the experiment. It was noted that temperature must influence the normal age–weight trend and that size was only one of the characteristics affected by adaptation to environmental temperatures.

III. Data were obtained from animals in the previous experiment when they were 6–12 months old. n-Butanol I^{131} extract (BEI^{131}) determinations were made on blood samples collected 1 week after the injection of 200 μc NaI^{131}. Blood glutathione (GSH) determinations were made every 2 months. At 50°F. Brown Swiss and Holsteins made greater weight gains than at 80°F. All breeds at 50°F. had lower values of GSH and higher values of BEI^{131} than at 80°F. At the early age the higher temperature had the most pronounced effects, which lessened as the animals grew older. There was a breed difference in GSH values, the highest concentration being in the Jerseys.—Joyce E. Hammant.

Kibler, H. H. (1960). **Oxygen consumption in cattle in relation to rate of increase in environmental temperature.**—Nature, Lond. **186**, 972-973. 247

Nine 14-month-old female Jersey, Holstein and Brown Swiss calves were reared at a constant temperature, 50°F. When experimentally acclimatized to heat, the animals were kept for successive 2 week periods at 50°, 70°, 80° and 90°F. during which time the rectal temperature increased by 2·1°F. and oxygen consumption decreased from 110 to 85 litres/hour. The same animals, exposed to rapidly rising temperatures, increasing to 111°F. in 5 hours, had a rectal temperature increased by 1·9°F. and oxygen consumption increased from 83 to 107 litres per hour. This also occurred when the animals were fasted.—Joyce E. Hammant.

Aliev, A. A. (1960). **[Influence of high environmental temperature on parotid gland secretion in buffaloes.]**—Sechenov J. Physiol. **46**, 552-558. [In Russian. Summary in English.] 248

Two buffaloes, aged 2½–3 years, with cannulated parotid ducts, were studied in Baku at a summer temperature ranging from 22° to 38·6°C. with relative humidity of 54–86%. At temperatures which caused the animals to pant the volume of parotid saliva increased by 2 or 2·5 times and the dry-matter content decreased, with a relative increase in the proportion of minerals to organic substances. During this state there was little salivary response to carbachol or atropine. A cold-water shower reduced secretion to normal. —R.M.

Dowling, D. F. (1960). **The significance of the coat in heat tolerance of cattle. II. Effect of solar radiation on body temperature.**—Aust. J. agric. Res. **11**, 871-874. [Author's summary modified.] 249

To test the effect of solar radiation on the body temperature of cattle (Australian Illawarra Shorthorns, Shorthorns, Brahman × Shorthorn Crossbreds), both clipped and with hair coat, cattle in a clear transparent plastic covering were compared with others in a white reflective plastic covering. The mean body temperature of the animals in white plastic coats was 0·15°F. lower than that of animals in clear plastic coats. This difference was highly significant statistically ($P<0·001$). Animals in both clear and white coats had higher body temperatures than controls without plastic coats. The difference was highly

significant, and was about 1·5°F. in the clipped animals. The rise in body temperature of the animals in plastic coats was presumably due to interference with vaporization from the skin surface.

Wodzicka, M. (1960). **Seasonal variations in wool growth and heat tolerance of sheep. I. Wool growth. II. Heat tolerance.**—Aust. J. agric. Res. **11,** 75-84 & 85-96. [Author's summary modified.] **250**

The experiments were carried out at Beltsville, U.S.A. Fifteen rams were divided into 3 groups. Group I received natural daylight, and was shorn monthly. Group II had a 7 : 17 hours of daylight to darkness rhythm and was shorn every 6 months, in winter and in summer. Group III received natural daylight and was shorn every 6 months. Wool growth and heat tolerance were investigated.

All rams produced significantly more wool in summer than in winter. The mean body weight and food intake were both greater in winter than in summer suggesting that the rhythm of wool growth was not a consequence of poorer feeding in winter.

The rams of group I grew considerably more wool than rams of groups II and III, but the difference was not statistically significant. The short day treatment of group II did not increase the annual wool production nor reduce the seasonal rhythm of wool growth. This result conflicts with the conclusions of Coop & Hart [*Proc. N.Z. Soc. Anim. Prod.* **13,** 113 (1953)]. It is concluded that temperature rather than light controls the seasonal rhythm of wool growth.

The heat tolerance of the rams at an air temperature of 105°F. (40·6°C.) and 34 mm. Hg water vapour pressure was studied. The rams were more heat tolerant in summer than in winter. Shearing increased the heat tolerance, presumably by enhancing the efficiency of evaporative cooling from the skin. Shearing reduced acclimatization especially during the cooler months.

Chancellor, L. & Glick, B. (1960). **Effect of temperature as a stressor on white blood cells, adrenals and bursae of Fabricius of chicks.** — Amer. J. Physiol. **198,** 1346-1348. [Authors' summary modified.] **251**

Birds bled immediately after 15–30 min. exposures to between 112 and 118°F. developed a great decrease in total w.b.c. and an increase in the proportion of lymphocytes. Exposure for 30 mins to 41–44°F. had no consistent effect on w.b.c. Neither temperature range affected the weights of the bursa or the adrenal glands.

Noskov, N. M. (1960). **[The inflammatory reaction in new-born calves.]** — Bull. Biol. Med. exp. URSS **50,** No. 8 pp. 80-83. [In Russian. Summary in English.] **252**

Inflammation caused by s/c injection of 0·1 ml. turpentine was more severe in calves between 0 and 6 days of age than in calves aged 38–42 days.—R.M.

Charlet-Léry, G. (1960). Étude de la variation du niveau des échanges gazeux provoqués par l'ingestion d'aliments y compris l'eau chez le porc. **[Variations in gas exchange provoked by ingestion of food or water in the pig.]** — C.R. Acad. Sci., Paris **251,** 140-142. **253**

Consumption of food, regardless of type, was promptly followed by an increase in heat production and respiration.—R.M.

Hironaka, R., Draper, H. H. & Kastelic, J. (1960). **Physiological aspects of aging. III. The influence of aging on calcium metabolism in rats.** — J. Nutr. **71,** 356-360. [Authors' summary modified.] **254**

Rats of two age groups (10 to 12 months and 22 to 32 months) were used. The endogenous excretion as well as intestinal absorption of calcium were greater in the older animals. Retention of calcium incorporated into the skeleton, measured by Ca^{45} labelling, was much poorer in the older group, although both groups were in overall calcium balance. These results indicate that aged rats were subject to a greater loss of Ca from the body but were able to maintain Ca equilibrium by increasing the uptake of dietary calcium from the intestine.

Anon. (1959). Bericht über den VI. internationalen Blutgruppenkongress in München 21. — 23. August 1959. **[Report of the VIth International Blood group Congress in Munich.]** pp. 111. Munich: Institut für Blutgruppen-forschung. [In English.] **255**

This report contains four long papers (three in English, one in German) and statements by representatives of 11 countries on the current status of blood group research. The papers are: relationships between blood groups and production characters in cattle, by J. Rendel; investigations on cattle, pig and dog in Denmark, by E. Andresen & others; relationship between blood groups and lactation in heifers (in German), by A. Tolle;

blood groups in chickens, by D. G. Gilmour. Recommendations about antigens were made at the end of the report.—R.M.

Jaffe, P. (1960). **Differences in numbers of erythrocytes between inbred lines of chickens.** —Nature, Lond. **186,** 978-979. 256

Adult females of the Reseaheath inbred White Leghorn strains C, I, and W were studied. Line C birds had a lower haematocrit value, haemoglobin concentration and r.b.c. count, which was not pathological. The r.b.c. of these birds became haemolysed at higher concentrations of saline than those of Line W.—Joyce E. Hammant.

Salmin, I. P. (1960). **[Role of mechanoreceptors of the compound stomach in the regulation of rumination.]** — Sechenov J. Physiol. **46,** 984-991. [In Russian.] 257

Rumination is caused mainly by stimulation af tactile receptors in the folds of the reticulum by particles of coarse food; stimulation of tactile receptors in other parts of the digestive tract is of secondary importance. Rumination inhibits stimulation of the baroreceptors of omasum and abomasum and partly inhibits baroreceptors and chemoreceptors of the intestine. The periodic nature of rumination is due to sequential changes in the intensity of stimulation of tactile receptors in reticulum and baroreceptors in omasum and abomasum.

The rumination centre in ruminants corresponds to the vomiting centre in non-ruminants. Periodic rumination continues during the night.—R.M.

Starovoĭtov, A. M. (1960). **[Age changes in contractions of the stomach in piglets.]**— Sechenov J. Physiol. **46,** 572-578. [In Russian. Summary in English.] 258

A fistula was fitted in the fundus of the stomach of 12 piglets at 3–5 days of age. In another 9 fistulae were inserted at various ages in different parts of the stomach and in some in the small intestine as well. Observations were made at intervals of 3–5 days for up to 120 days. Contractions in young piglets were continuous. Resting phases were first noticed at 25–30 days and each lasted 2–4 min. In weaned piglets the resting phases became longer (15–30 min.) and periods of contractions lasted 10–60 min. Ingestion of milk inhibited contractions.—R.M.

Lathem, W., Davis, B. B. & Rodnan, G. P. (1960). **Renal tubular secretion of uric acid in the mongrel dog.**—Amer. J. Physiol. **199,** 9-12. 259

Like the normal Dalmatian dog, mongrels could excrete uric acid from the renal tubules. This was demonstrated by i/v inj. of sodium urate, with osmotic diuresis induced by simultaneous i/v inj. of mannitol.—R.M.

Aitken, R. N. C. (1960). **A histochemical study of the accessory genital organs of the boar.** —J. Anat., Lond. **94,** 130-142. 260

The seminal vesicles apparently secreted a mucoprotein, and possibly a glycolipid, but glycogen was not detected. There were often large numbers of mast cells in the vesicles. Transformation to adult structure and histochemistry occurred between 90 and 133 days of age. The prostate appeared to secrete a mucoprotein, and a 5-nucleotidase was detected in the disseminated part of the prostate. Bulbourethral glands produced a gelatinous mucopolysaccharide.—R.M.

Herin, R. A., Booth, N. H. & Johnson, R. M. (1960). **Thermoregulatory effects of abdominal air sacs on spermatogenesis in domestic fowl.**—Amer. J. Physiol. **198,** 1343-1345. 261

In an attempt to determine if the posterior abdominal air sacs exert a cooling effect on the testicles of the cock, thereby facilitating normal spermatogenesis, the air sacs were surgically removed and the testicles insulated with cotton wool. This operation had no effect on semen quality.—R.M.

Varenika, D. (1960). Histologische Untersuchungen am Zwischenhirn-Hypophysensystem des Schweines. **[Histology of the hypothalamus-pituitary system in pigs.]**— Arch. exp. VetMed. **14,** 42-59. 262

The author examined 26 healthy slaughtered pigs, 6 healthy piglets and pigs that had died from piglet anaemia (4), oedema disease (4), gastro-enteritis (9), diseases of the weaning period (6) or miscellaneous conditions (3). Sections were fixed in Bouin's fluid and stained by Gomori's method. Neurosecretory activity in the hypothalamus was very slight, but it was present from one day of age. There were no significant post-mortem changes in neurosecretory tissue within 24 hours of death.—R.M.

Mancini, R. E., Brandes, D., Portela, A., Izquierdo, I. & Kirschbaum, P. (1960). **Autoradiographic and histochemical study of the cock's comb in normal and hormonally treated birds.** — Endocrinology **67,** 430-440. [Authors' abst. modified.] 263

The cock's comb undergoes histological and histochemical changes at puberty. Before puberty the corium is mainly fibrous connective tissue. After puberty the corium changes into loose connective tissue with a predominance of ground substance. This ground substance stains metachromatically, gives a positive reaction with Hale's colloidal iron and Alcian Blue and rapidly incorporates $S^{35}O_4$. These changes increase from the 15th to the 60th day of age.

Testosterone locally applied to the comb of prepuberal birds changed the fibrous tissue into a mucoid one rich in mucopolysaccharides which rapidly incorporated $S^{35}O_4$. Castration transformed the mucoid connective tissue to a fibrous type as seen in prepuberal birds; tests for mucopolysaccharides became weaker or negative and uptake of $S^{35}O_4$ was diminished.

Dorn, P. (1960). Die Morphologie der Epithelkörperchen im Zusammenhang mit dem Ca-Stoffwechsel des Huhnes. **[Morphology of the parathyroid in fowls in relation to calcium metabolism.]**—Zbl. VetMed. **7**, 222-225. **264**

Sections of parathyroids from 60 hens were examined after staining with haematoxylin and eosin. Three types of cells were distinguished: dark chief cells, (the main component of an inactive gland), light chief cells, and clear cells (dark peripheral nucleus with a clear cytoplasm). Changes in the proportion of these cells in hens in full lay and in hens given oestrogen were regarded as signs of activation of the gland.—R.M.

Rothchild, I. (1960). **The corpus luteum-pituitary relationship: I. The association between the cause of luteotrophin secretion and the cause of follicular quiescence during lactation; the basis for a tentative theory of the corpus luteum-pituitary relationship in the rat. II. The lack of an inhibiting effect of progesterone on the secretion of pituitary luteotrophin.**—Endocrinology **67**, 9-41 & 54-61. **265**

III. Rothchild, I. & Dickey, R. (1960). **The corpus luteum-pituitary relationship: A study of the compensatory hypertrophy of the ovary during pseudopregnancy and lactation in the rat.**—Ibid. 42-47. **266**

IV. Quilligan, E. J. & Rothchild, I. (1960). **The corpus luteum-pituitary relationship: The luteotrophic activity of homotransplanted pituitaries in intact rats.**—Ibid. 48-53. **267**

V. Rothchild, I. & Quilligan, E. J. (1960). **The corpus luteum-pituitary relationship: On the reports that oxytocin stimulates the secretion of luteotrophin.**—Ibid. 122-125. **268**

I. Rats weighing 200–300 g. were used for investigating the association between the pituitary luteotrophin (LTH) secretion and follicular quiescence in lactating rats and the maintenance of lactation in rats with denervated pituitaries. Follicular quiescence was found not to be due to the direct effect of LTH on the ovaries but to suppression of folliculotrophins (FTH) and this suppression was proportional to the size of the litter being reared. With small litters little suppression of FTH occurred. That the secretion of LTH was not continuous and did not depend on c.n.s. stimulation was shown. It was concluded that the evidence supported the hypothesis that a c.n.s. influence inhibited LTH secretion and that another stimulated FTH secretion and that suckling suppressed both influences.

II. Neither unilateral ovariectomy nor the administration of progesterone (2 or 4 mg./day for 8 days) affected the size of the corpora lutea of pseudopregnant rats. This was also true of hypophysectomized animals bearing auto-transplanted pituitaries. Progesterone, therefore, did not inhibit the secretion of LTH.

III. The growth of the remaining ovary was studied in normal cycling (a), pseudopregnant(b), and lactating rats (c). The left ovary was removed on the first day of dioestrus in the normal and pseudopregnant rats and the first day post-partum in the lactating animals. The right ovary steadily increased in weight in group (a); whereas in group (b) there was no significant change until after the 8th post-operative day; and in group (c) no change occurred during the observation period of 20 days. The effects of lactation and pseudo-pregnancy on the suppression of FTH secretion were discussed.

IV. 37 females received pituitary grafts in the left kidney capsule from donors killed on the 1st day of dioestrus. Control rats received a graft of cerebellum, and continued to have normal cycles. The test group showed a pseudopregnancy-like extension of the dioestrus phase in progress at the time of grafting and succeeding cycles were also prolonged. Smears from these animals indicated a high incidence of incomplete oestrus. It was suggested that secretion of LTH by the pituitary transplant cannot therefore have been continuous.

V. Injections of varying amounts of

oxytocin, vasopressin and saline were made at varying intervals into sexually mature female rats. No prolonged cycles were observed related to the effect of oxytocin. Lactating rats deprived of their litters produced deciduomata on the 5th or 7th day post-partum; similarly when litters were removed on the 2nd day and the uterus traumatized on the 6th, irrespective of oxytocin treatment. It was consequently considered that the theory that oxytocin stimulates the pituitary luteotrophin secretion was invalidated.

—JOYCE E. HAMMANT.

Watanabe, T. (1960). **[Comparative and topographical anatomy of the fowl. VII. Peripheral course of the vagus nerve.]**—Jap. J. vet. Sci. 22, 145-154. [In Japanese. Summary in English.] 269

Description of the course of the nerve is accompanied by 8 drawings with Latin captions.—R.M.

Bell, F. R. (1960). **The localization within the dorsal motor nucleus of the vagus of the efferent fibres to the ruminant stomach.**—J. Anat., Lond. 94, 410-417. 270

The efferent fibres were traced by neurectomy experiments on goats.—R.M.

Ashdown, R. R. (1960). **The adherence between the free end of the bovine penis and its sheath.**—J. Anat., Lond. 94, 198-204. 271

The penis was united to the sheath by a lamella of ectodermal cells and a frenulum of connective tissue. Separation by keratinization of the lamella started early in embryonic life.—R.M.

Backhouse, K. M. & Butler, H. (1960). **The gubernaculum testis of the pig (Sus scrofa).** —J. Anat., Lond. 94, 107-120. 272

Changes in structure from the early embryonic stage to adult were described, with reference to descent of the testicle.—R.M.

Forenbacher, S., Keler-Bačoka, M. & Pučar, Z. (1960). **Fat compounds in the serum of horses. Chemical, electrophoretic and two-dimensional electrochromatographic investigations.** — Zbl. VetMed. 7, 691-701. [In English. Summaries in French, German and Spanish. English summary modified.] 273

The lipids and proteins in the blood serum of 61 healthy horses were studied by quantitative chemical methods, one-dimensional electrophoresis and two-dimensional electrochromatography.

Mean values (in mg.%) were: cholesterol 98·8; phospholipids 128; neutral fats 45·2; total lipids 275·9. Individual differences due to sex, age and feeding were taken into consideration in the evaluation of results.

Ashton, G. C. (1960). **Thread protein and β-globulin polymorphism in the serum proteins of pigs.** — Nature, Lond. 186, 991-992. 274

Thread proteins can be demonstrated in pigs' sera by one-dimensional starch gel electrophoresis using Hopkin and Williams potato starch but not commercially prepared starch. By two-dimensional electrophoresis in agar and then starch gel, 3 thread-protein phenotypes have been found in sera of Large White and Essex Saddleback pigs depending on the presence of one or both of a pair of thread proteins. Three β-globulin phenotypes have also been demonstrated in pigs' sera.

—A. ACKROYD.

See also abst. 92 (biochemistry of rumen protozoa).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Anon. (1960). **Strontium 90 in human diet in the United Kingdom, 1959.** pp. 58. A.R.C. Radiobiological Laboratory Rep. No. 3. London: H.M. Stat. Off. 3s. 6. 275

This report contains the results for the second year of the survey of strontium 90 in human diet. Two types of investigation are described: a national survey, which enables the mean ratio of strontium 90 to calcium in the average diet to be assessed, and local studies in areas where the quantity of strontium 90 in diet is likely to exceed the average.

Milk continues to be the chief source of strontium 90. But the ratio of strontium 90 to calcium in milk is similar to or less than that in many other foods. Since the concentration of strontium 90 in newly formed human bone depends on the ratio of Sr to Ca, rather than on the absolute quantity of strontium 90 in the total diet, milk should not be regarded as especially hazardous.

Because climatic factors can exert considerable effects on the quantities of Sr 90 and of Ca which are absorbed by plants and hence on the levels in human diet it is not possible to make quantitative predictions as to the situation in the immediate future. But there

is considerable evidence that Sr 90, which has hitherto been released into the atmosphere, has already exerted its major effect; decreasing levels in human diet may therefore be expected in the future.—R.M.

Kissling, R. (1960). Über die Beeinflussung der bakteriologischen Fleischuntersuchung durch antibiotikahaltige Organe. **[Influence of antibiotic residues in organs on bacteriological meat inspection.]** — Wien. tierärztl. Mschr. **47**, 644-648. [Summaries in English, French and Italian. English summary modified.] **276**

Antibiotic residues were found in the muscle or organs of 10 out of 48 suspected carcasses. Inhibition of bacterial growth in samples containing antibiotic was not significantly greater than in samples free from antibiotic. It was concluded that antibiotic residues do not influence the results of bacteriological meat inspection.

Fujii, T. (1960). Scienza e pratica veterinarie in Giappone. **[Development of the veterinary service in Japan.]**—Veterinaria, Milano **9**, 118-121. **277**

Veterinary science in Japan is of recent history and its development is associated with a change in the dietary of the people, especially since the second world war when increased consumption of meat and milk products, stimulated the breeding of livestock. There are 16,676 veterinarians of whom 7,568 are employed by the state, 4,803 by private organizations and the rest are private practitioners. There are 11 universities and 3 independent colleges and the course of studies is 4 years. Besides the university laboratories there are other research centres, the most important of which is the National Veterinary Institute of Tokyo, annexed to the Ministry of Agriculture and Forestry. Equine infectious anaemia, bovine TB. and the avian leucosis complex are the main diseases of interest to research workers and practitioners. —T.E.G.R.

See also absts. **66 & 68** (brucellosis); **76** (survival of leptospira in water); **91** (toxoplasmosis in slaughter animals); **146** (malathion residues in milk and meat); **152** (cysticercus); **153** (viable trichinella in preserved pork).

REPRODUCTION AND REPRODUCTIVE DISORDERS

Blackshaw, A. W. (1960). **The glycolysis and reducing activity of ram spermatozoa in phosphate-containing media.**—Aust. J. biol. Sci. **13**, 371-377. [Author's summary.] **278**

Tetrazolium was reduced more rapidly under anaerobic conditions than aerobically unless fructose was present, when reduction was quite rapid in air. Phosphate stimulates the reduction of tetrazolium, the breakdown of fructose, and the accumulation of lactic acid. Both phosphate and succinate stimulate the reduction of tetrazolium by washed ram spermatozoa.

De Muelenaere, H. J. H. & Quicke, G. V. (1960). **Studies on the biochemistry of cock semen. 4. Respiration studies.** — S. Afr. J. agric. Sci. **3**, 281-286. [In English. Summaries in French and Afrikaans. Authors' abst. modified.] **279**

The oxygen uptake of cock spermatozoa in concentrations of 1·9 to 4 mg. dry weight per 2 ml. suspension was fairly constant. Higher dilution resulted in a marked increase in oxygen uptake and a decrease in motility.

Both spermatozoa and seminal plasma took up oxygen during a twelve hour respiration period. Washed semen had a lower respiratory activity than whole semen, the amount of oxygen taken up by washed semen supplemented with glucose being less than that obtained with whole semen. Evidence is offered that this difference is probably due to injury during washing.

I. Rothschild. (1960). **X and Y spermatozoa.** —Nature, Lond. **187**, 253-254. **280**

II. Shettles, L. B. (1960). **X and Y spermatozoa.**—Ibid. 254-255. **281**

III. Bishop, D. W. (1960). **X and Y spermatozoa.**—Ibid. 255-256. **282**

I. So far no satisfactory evidence has been produced that physical differences which would make their separation possible, exist between X and Y spermatozoa. The hypotheses that there are differences in their mass and in their surface electric charge have not been confirmed, whilst Shettles's assertion that two types of head, one small with a centrally located round mass of nuclear material and the other large with a centrally located elongated mass, can be distinguished should be treated with reserve as measurements of spermatozoa heads in animals have never shown a bimodal distribution.

II. In every semen specimen from more

than 100 men so far studied by phase contrast microscopy, two distinct populations have been seen by several competent observers. Differences involve the head and nuclear size and shape, the position, size and shape of the unequivocally Feulgen-positive most central chromosomal mass, and the pattern of reflected light. In some of the heads of the round type which seem to predominate in most of the specimens, 23 chromosomal masses have been counted. In some men the larger normal elongated type are 15μ in length. The two populations have also been seen in dried smears viewed in bright light microscopy.

III. Even if the probability of compounded artefacts of air-dried shrinkage and phase-contrast optical aberration is ignored, Shettles's report provides no evidence for specifying the "most central chromosome", whilst the description of the ultrastructural pattern of nuclear arrangement seems doubtful in the light of recent cytochemical and electron micrographical investigations.—A. ACKROYD.

Wide, L. & Gemzell, C. A. (1960). **An immunological pregnancy test.** — Acta endocr., Copenhagen **35**, 261-267. [In English.] **283**

Chorionic gonadotrophin (CG) in human urine inhibited the agglutination of erythrocytes, previously sensitized with CG, by anti-CG rabbit serum.—R.M.

Radev, G., Todorov, A. & Danov, D. (1960). Histovaginale Methode zur Bestimmung der Trächtigkeit bei Schafen. **[Vaginal biopsy for diagnosis of pregnancy in sheep.]** — Zuchthyg. FortpflStörung. u. Besamung **4**, 149-161. [Summaries in English and Russian.] **284**

Biopsy samples are taken with the ewe restrained in the position for artificial insemination. Four hands are necessary, each left hand keeps the tissue on the stretch with artery forceps, one right hand planes off the epithelium with a special bent needle and the other then cuts it with scissors. The sample 1 cm. long is taken 3–4 cm. above the urethral orifice. Formol saline or Bouin fixation and any desired histological technique may be used. After one month's pregnancy the superficial layers of cells are distinctly cuboidal in pattern; in the non-pregnant subjects they are much flattened and stratified and relatively freer from leucocytes. In the last 20 days of pregnancy the "non-pregnant" pattern is restored. The technique was carried out on 63 pregnant and 18 non-pregnant ewes.

—F. L. M. DAWSON.

McLean, J. W. & Claxton, J. H. (1960). **Vaginal prolapse in ewes. Part VII: The measurement and effect of intra-abdominal pressure.**—N.Z. vet. J. **8**, 51-61. **285**

Vaginal prolapse has been observed most frequently in heavy conditioned, twin-bearing ewes grazing on downs or hill country in seasons of abundant grass growth, but experimentally no correlation could be found between the degree of relaxation of the tissues of the posterior reproductive tract and the level of nutrition or condition of the ewe during pregnancy. By various techniques, it was established that the factor of aetiological significance is the intra-abdominal pressure on the pelvic organs. Although this varied in degree from sheep to sheep, in the standing position it was usually negative, was markedly positive on lying down and was further increased when the ewe assumed a position equivalent to lying on a 16° slope. The size of the increments between pressures in the 3 positions appeared to be characteristic for the individual over a range of conditions which may markedly affect the actual values. No significant differences in actual pressure were found between non-pregnant, single-pregnant and twin-pregnant ewes of about the same liveweight, but an increase in liveweight led to an increase in the actual pressure values. Emptying of the digestive tract by fasting decreased the values, whilst if the pressures were artificially increased by corseting, the intake of food was reduced.—A. ACKROYD.

Rossi, C. & Ghittino, P. (1960). Un focolaio di aborto bovino caratterizzato da epatopatia e cromatosi renale dei feti. **[Bovine abortion characterized by liver disease and renal chromatosis in the foetus.]** — Vet. ital. **11**, 341-353. [Summaries in English, French and German.] **286**

In a herd of 90 cows there were 6 abortions at the 7th–9th months of pregnancy. There was retention of the placenta in 2 of the aborting cows of which one developed agalactia and was slaughtered. The diet consisted of meadow hay and a balanced ration in which part of the protein substance was replaced by synthetic urea. Bacteriological and biological tests on foetal organs gave negative results. P.M. examination of the foetuses revealed enlarged spleen (8–10 times) with hyperaemia of the superficial vessels, enlarged discoloured liver, oedema of the renal fat, dark brown kidneys, haemorrhages in the heart, trachea and oesophagus, and oedema of

the thymus. The histological aspects of the lesions are described. Melanin was observed in the renal cells. Transmission experiments with the supernatant fluid of a suspension of spleen, liver and kidney from an aborted foetus gave negative results.—T.E.G.R.

Hansel, W. & Wagner, W. C. (1960). **Luteal inhibition in the bovine as a result of oxytocin injections, uterine dilatation, and intrauterine infusions of seminal and preputial fluids.**—J. Dairy Sci. 43, 796-805. 287

Daily injection of 100 U.S.P. units of oxytocin to 5 heifers during different stages of the oestrous cycle indicated that much the greatest effect on cycle length was produced by treatment from the third to the sixth day after oestrus. For a repeat test, using 18 cows (3–8 years old) injected on the first to the sixth day a dose of 200 units was necessary to reduce cycle length in these larger animals.

The remaining two trials were aimed at investigating the possible uterine mediation of these effects. Balloons attached to rubber catheters were introduced into the uterus in 19 heifers and 8 cows and dilated with 10–25 ml. water during oestrus or on the following day. There was a general reduction of cycle length to 12–13 days. Sixteen virgin heifers received during oestrus 2–5 ml. of undiluted semen or centrifuged sediment from preputial washings (sometimes containing *Vibrio fetus*). Two became pregnant; the mean cycle length of the others was reduced from 22 to 14 days. Three cows in the second experiment developed cystic corpora lutea. Ovaries removed from two heifers in the third experiment showed one cystic and one abnormally small corpus, both bodies showed vacuolation and pyknosis of luteal cells and undue fibrosis. A third corpus luteum from a heifer of the final series was both small and cystic and three other heifers developed cystic corpora on the evidence of rectal palpation, one of these became pregnant.—F. L. M. Dawson.

Short, R. V. (1960). **Blood progesterone levels in relation to parturition.**—J. Reprod. Fertil. 1, 61-70. 288

In women the blood progesterone level remains high up to and even after parturition, though terminal drop in pregnanediol excretion suggests a decreasing rate of metabolism. In the mare the progesterone level in cord blood also remains high at foaling time. Hence in neither of these species does parturition seem likely to be mediated by progesterone metabolism, though there is much evidence that this is the case in laboratory rodents. Levels in the cow decline 10 days before calving: there is no evidence of foetal progesterone production, but much evidence that the foetus determines gestation length. Hence this evidence on the role of progesterone in parturition is inconclusive. In the ewe no changes in progesterone metabolism during pregnancy have been detected. In the sow the position remains obscure; scanty observations suggest the same situation may prevail as in the rabbit, rat and mouse.

—F. L. M. Dawson.

Robertson, H. A. & Hutchinson, J. S. M. (1960). **The levels of FSH and LH in the anterior pituitary gland of the ewe during the reproductive cycle.** — Acta endocr., Copenhagen Suppl. No. 51 p. 195. [In English.] 289

This is an abstract appearing in the proceedings of the 1st International Congress of Endocrinology, Copenhagen, July 1960. A cyclic change occurred in the concentrations of both FSH and LH during the oestrous cycle, with minimum values at ovulation.

—R.M.

Pigon, H., Clegg, M. T. & Cole, H. H. (1960). **The formation of antigonadotrophins in sheep and its effect on the endocrines and reproductive system.**—Acta endocr., Copenhagen 35, 253-260. [In English. Authors' abst. modified.] 290

Eight ewes were inj. s/c or i/v twice weekly for 5 months with various doses of equine gonadotrophin. Anti-gonadotrophic activity appeared by the second week with inj. of 200 IU, by the third week with 500 IU and by the fifth week with the highest dose (1,000 IU).

Prolonged administration of gonadotrophin did not influence the weights of the pituitary gland, adrenals, thyroid or ovaries. The two largest doses (500 and 1,000 IU) stopped cyclic changes in the ovaries and reduced the luteinizing hormone content of the pituitary gland.

Svendsen, R. (1960). **A double isotopic method for the quantitative determination of oestrone and 17 beta-oestradiol in plasma.** — Acta endocr., Copenhagen 35, 161-187. [In English.] 291

Plasma extract was esterified with a pipsyl compound labelled with radiosulphur. Com-

parison was achieved by adding a known amount of esterified oestrone labelled with radio-iodine.—R.M.

Osborne, H. G. (1960). **The investigation of infertility syndromes in beef herds.** — Aust. vet. J. **36,** 164-171. Discussion: pp. 307-308. **292**

In the area of northern New South Wales and southern Queensland, where the highest beef cattle concentrations in Australia are found, cattle are not individually identified and are run in groups of 100 to 500 in paddocks of 500 to 5,000 acres. Because of the type of country complete musters are rare and there may be movement of cattle between paddocks and adjoining properties because of poor fencing. Staff is usually inadequate, and cattle may have to be driven long distances to yards which are often poorly equipped. Methods are suggested for the examination and control of infertility syndromes, to increase calf-branding percentages, in herds of 500 to 1,000 breeders, with particular reference to pregnancy diagnosis and herd sampling.

The discussion refers to infectious and nutritional factors which cause reduced fertility and abortion. The importance of keeping adequate records is stressed.

—W. L. HINDMARSH.

Ashida, K. (1960). **[Enhancement of fertilization by progesterone injected into dairy cows after breeding.]** — Bull. Nat. Inst. Anim. Hlth, Tokyo No. 39 pp. 1-11. [In Japanese. Summary in English.] **293**

Of 26 cows and heifers served 3 times without conception, 18 were injected with 10 to 30 mg. oil solution of progesterone in the early luteal stage after service. Thirteen became pregnant, none of the 8 controls conceived.—E.V.L.

Cantoni, O. & Nava, G. A. (1960). Contributo allo studio della patogenesi dell'endometrite iperplastica nella specie canina. **[Blood cholesterol in endometritis in the bitch.]**— Veterinaria, Milano **9,** 200-201. [Summaries in English, French, German, Spanish and Portuguese.] **294**

In all of 10 bitches with pyometra blood cholesterol levels were high. It is considered that cholesterol (assuming that it may be the precursor of sex hormones, particularly progesterone) induces hormonal imbalance which gives rise to endometritis with subsequent bacterial invasion.—T.E.G.R.

See also absts. **39** (Haemophilus species associated with bovine vaginitis and cervicitis); **56-69** (brucellosis); **78-79** (vibriosis); **87** (trichomoniasis); **116** (virus abortion in ewes); **167** (testicular neoplasms); **260** (histochemistry of accessory genital organs of boars); **261** (spermatogenesis in fowls); **265-268** (corpus luteum-pituitary relationship); **271** (adhesion of penis to prepuce in bulls); **297** (artificial insemination); **298** (book, reproduction in the dog); **299** (German symposium on endocrinology).

BOOK REVIEWS

Blood, D. C. & Henderson, J. A. (1960). **Veterinary medicine.** pp. xiv + 1008. London: Baillière, Tindall & Cox. 84s. **295**

This important book deals with the diseases of the larger farm animals, particularly horses, cattle, sheep and pigs, but not dogs, cats or poultry. Diseases of restricted geographical incidence, such as those confined to the African continent, are largely excluded. The contents fall into two parts—Part One, of just over 300 pages, on General Medicine, and Part Two (which is twice as long as Part One, and not, as is wrongly stated inside the dust cover, of approximately equal size) on Special Medicine. Part One is concerned with: the methods of clinical examination; general systemic states such as toxaemia and septicaemia; diseases of the new-born animal; and diseases of the different organs and body systems. In Part Two, after a chapter on mastitis (which would seem really to belong to Part One), there are accounts of diseases arranged on an aetiological basis: diseases due to bacteria, viruses, rickettsiae, fungi and protozoa; metabolic diseases; diseases due to nutritional deficiencies, to physical and chemical agents, to allergy (concerned with haemolytic disease of the newborn, purpura haemorrhagica, laminitis, and Queensland itch), and to inheritance of undesirable characters. A final chapter deals with diseases of unknown or uncertain aetiology, such as grass sickness of horses, fog fever and enzootic haematuria of cattle, and atrophic rhinitis of pigs.

Throughout the book, and particularly in Part Two the various conditions, after being first defined, are dealt with under the following headings, so far as possible: aetiology, transmission, pathogenesis, clinical findings, clinical pathology (referring to laboratory examinations of value in diagnosis or prognosis), necropsy findings, differential diagnosis, treatment and control. While there

are no illustrations, this is no great lack, as the verbal descriptions are particularly clear and unambiguous.

There are a considerable number of references to recent literature, giving a wide coverage of English, (and to a lesser extent of Continental) as well as of American sources—over 300 appear in Part One, and well over 2,000 in Part Two. Thirteen Tables summarize information on such subjects as the causes of abortion in cattle and sheep, the differentiation of acute vesicular diseases, and the dietary requirements of mature animals for calcium, phosphorus and vitamin D.

This is an excellent text-book, up-to-date, well-produced, and well-balanced: it gives due attention to important conditions such as mastitis, abortion, and diseases of the ruminant stomach, but also refers to some rare, albeit interesting, conditions, such as Manchester Wasting Disease. It would be wrong to say that there are no errors—for example, melanomas in cattle are wrongly stated (p. 319) to be "usually malignant"—or that there are no printer's errors—pruritus is consistently given as pruritis—or that the references are invariably correct—*e.g.* John appears as Johns on p. 126—, or that there are no omissions—African horse sickness, for example, would warrant attention, but these are trivial points to set against the general sound quality of the book. It can be warmly recommended not only to veterinary students in their clinical years, but also to practising veterinary surgeons. This outstanding book is cheap at its price.—E. COTCHIN.

Ruch, T. C. (1959). **Diseases of laboratory primates.** pp. xxvi+600. Philadelphia (& London): W. B. Saunders Co. 52s. 6d. **296**

This volume is the first of a projected "Handbook of Primates" in four volumes. The final volume is to bring up to date the same author's "Bibliographia primatologica" published in 1941. The present work is thus based on a bibliography compiled over many years and the contents are exhaustively referenced. The work is well ordered and intelligibly written, beautifully produced and lavishly illustrated. It will be a standard work of reference for many years and is a significant development in the study of comparative medicine.

There are 14 chapters on:—Diet and disease including nutritional diseases; Diseases of the mouth and teeth; Diarrhoea and dysentery caused by bacteria and viruses; Intestinal protozoa; Intestinal helminths, with a survey of helminthic diseases; Tuberculosis; Miscellaneous diseases of the abdomen and chest including generalised diseases; Blood parasites; Cardiovascular diseases and blood dyscrasias; Diseases of the central nervous system and sense organs; Diseases of the endocrine, reproductive and urinary systems; Bone diseases; Diseases of the skin; Neoplasia.

Each chapter is essentially a monograph on its subject. Some are excellent; for example that on the skin; others, such as those on the diseases of the abdomen and of bone, leave the experienced worker with a feeling that difficult issues have still not been clarified.

The author frankly admits the difficulties with which he has been faced in the opening paragraph of his first chapter on diet and disease.

"When speaking of a diet and disease one usually thinks of the deficiency diseases such as scurvy and beriberi and in the past when monkey diets were grossly inadequate, practically every necropsy protocol contained descriptions of lesions which on the basis of recent nutritional studies can now be attributed to diet deficiency. Today, however, the more important aspect of diet in primate culture is the somewhat mal-nourished monkey's susceptibility to disease. As will be brought out in succeeding chapters, it is almost impossible to determine whether the seriousness of many simian diseases results from the pathogenic capacities of the infecting organisms or from dietary inadequacies that reduce the monkey's resistance. In fact, a survey of monkey disease in the light of the relation between the dietary insufficiency and diseases leaves a distinct impression that the overwhelming nature of many cases of monkey disease has had its origin in subacute malnutrition." He then discusses the significance of 'silent' diseases due to bacteria, protozoa and helminths, and cites an instance in which seven monkeys were given vitamin-deficient diets and died in periods varying from 11 days to 16 months from miliary tuberculosis, parasitic diseases, colitis, enteritis, oesophagostomiasis and tuberculosis of the lungs.

These difficulties are well known to those concerned with primate medicine, and the assessment of the significance of pathological findings is not easy. A further difficulty was that of assessing the significance of pathogenic agents, since much of the knowledge of primate diseases has been derived from infec-

ions experimentally induced in the laboratory. It is, thus, often hard to assess the extent to which infections such as poliomyelitis may be of significance as a naturally occurring event.

Although the title specifies laboratory primates, the author does not restrict himself to these but discusses disease in almost all species from marmosets to gorillas. The marked variation in susceptibility to different diseases between the various groups, particularly between the Old World and New World species, is often not adequately covered, notably in respect of tuberculosis and salmonellosis; but this is a defect inevitable in a work based primarily on studies of published literature rather than on clinical or pathological experience.

Such criticisms are easy in respect of specific points or conditions but do not obscure the general excellence of the work nor the service performed by the author in reducing the scattered and voluminous literature to reasonable proportions and in giving a coherent account of the disease conditions to which primates are susceptible. The main value of the work is as a classical work of reference.—R. N. FIENNES.

Perry, E. J. (Edited by.) (1960). **The artificial insemination of farm animals.** pp. viii+430. New Brunswick: Rutgers University Press. 3rd revised edit. $6.50. 297

This book will undoubtedly have wide appeal to students of artificial breeding. The scope is broad and covers many aspects not found in other publications. In general, however, the depth is somewhat disappointing, both for the veterinarian in charge of an A.I. Centre, and the specialist in the science of animal reproduction.

The risk of disparity inevitably accompanies a publication to which several authors contribute. Professor Perry underestimates his capacity adequately to compile several of the chapters, the writing of which he has delegated to others.

It would be invidious to classify the chapters but it is not possible to omit mentioning the outstanding contribution by Dr. T. Mann of the A.R.C. Unit of Reproductive Physiology, Cambridge, on the evaluation of semen by chemical analysis. The substance of this comprises a basis for future technical advances in semen preservation and it is thoroughly recommended to all A.I. centre veterinarians.

The other chapters include articles upon A.I. in Cattle; Sheep and Goats; Swine; Horses and Donkeys; Water Buffaloes; Dogs; and Poultry. The elements of Reproductive Physiology, Diseases, Hormones and Breeding Systems are discussed. Many useful practical hints for those commencing A.I. work are similarly outlined.—D. H. L. MADDEN.

Harrop, A. E. (1960). **Reproduction in the dog.** pp. x+204. London: Baillière, Tindall & Cox. 30s. 298

The Editor breaks new ground for there has been no previous book on this subject; he is well known for his work on artificial insemination in dogs and has written the chapter dealing with this and natural mating and also the four chapters on physiology of reproduction, pregnancy, normal parturition and infertility. G. C. Knight has contributed a brilliant chapter on dystocia and surgical procedures. Other contributors are K. M. Dyce on anatomy of the reproductive organs, R. F. S. Creed on physiology, J. S. J. Lauder on the rearing of puppies and diseases of puppyhood (which he names "canine paediatrics") and D. M. Walker on nutrition and its effect on reproduction.

A criticism that applies to the whole book is that there are statements that this or that phenomenon differs, often greatly, in different breeds yet no attempt is made to specify the breeds in which the greatest variation occurs. Differences in breeds are sometimes so extreme that it would be a great help to know, for example, the breed differences in gestation period or onset of puberty.

The brevity of some sections, such as those dealing with mastitis or hereditary infertility, reveals our lack of knowledge about many fundamental problems, but others appear to be unnecessarily brief and uninformative. For example, a mere 20 lines is devoted to pyometra and there is no reference to the research that has been done on the pathology and pathogenesis of this condition; metritis and vaginitis are dismissed in eleven lines. There is no indication that data exist on neoplasms of the genital tract.

The strong points of this book are the well illustrated accounts of anatomy and physiology of normal pregnancy and parturition, and the indications and technique of surgical interference during parturition. These parts will be of great value to students and practising veterinary surgeons.—R.M.

Nowakowski, H. [Edited by.] (1960). Moderne Entwicklungen auf dem Gestagengebiet. Hormone in der Veterinärmedizin. Sechstes Symposion der Deutschen Gesellschaft für Endokrinologie Kiel, den 28. bis 30. April 1959. **[Progress in the field of gestagens. Hormones in veterinary medicine. Proceedings of the 6th Symposium of the German Society for Endocrinology held at Kiel in April 1959.]** pp. viii+441. Berlin (Göttingen & Heidelberg): Springer. DM 96. **299**

This collection of 57 papers plus discussions is divided into four parts: progress in the field of gestagens (progesterone and progesterone-like steroids); formation of androgens in the ovary; hormones in veterinary medicine; and miscellaneous papers. The 9 veterinary papers, all in German, comprise two on hormones for fattening animals and: chromosome changes in infertile bulls (by D. Knudsen); infertility and fertility in species hybrids (W. Jöchle); the use of Papanicolaou's method for indirectly demonstrating hormonal changes in cows before, during and after parturition (Aehnelt, Grunert & Zaki); urinary oestrogens in cows during pregnancy, parturition and the puerperal period (W. Rommel & P. Rommel); urinary ketosteroids in pigs (R. Lurie); alopecia responding to castration in dogs (E. Lettow); thyrotrophin treatment of acanthosis nigricans in dogs (S. Börnfors). Those concerned with the endocrinology of reproduction will find much of interest in the other sections of these proceedings. The book contains 276 illustrations, is bound with uncut pages in a paper cover, and costs the equivalent of five guineas.

—R.M.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

Broda, E. (1960). **Radioactive isotopes in biochemistry.** pp. x+376. Amsterdam (London, New York & Princeton): Elsevier Publishing Company. 57s.

Koch, T. (1960). Lehrbuch der Veterinär-Anatomie. Band I. Bewegungsapparat. **[Text-book of veterinary anatomy. Vol. I. Locomotory organs.]** pp. xii+380. Jena: Gustav Fischer. DM 30.

Lawson, D. F. (1960). **The technique of photomicrography.** pp. xvi+256. London: George Newnes Ltd. 55s.

Röhrer, H. & Pehl, K.-H. Atlas der pathologisch-anatomischen und histologischen Diagnostik der Schweinepest. **[Atlas of the pathological and histopathological diagnosis of swine fever.]** pp. 67. Jena: Gustav Fischer. DM 44.50.

Smith, R. N. (1960). **Radiography for the veterinary surgeon.** pp. 68. Bristol: John Wright & Sons Ltd. 13s. 6d.

—. (1959). **International pharmacopoeia. First Edition. Supplement.** pp. xx+224. Geneva: World Health Organization. 25s.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.

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